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WAR DEPARTMENT

G-2 Report.

ARGENTINA (Economic)

Subject: Industrial Aviation - Development & Use.

(b) Domestic Enterprise in the Employment  
of Commercial Aircraft.

RECEIVED G/2 W. D. 1930

In accordance with letter from the Latin-American Section dated May 21st., 1930, the following report on Aviation in Argentina is submitted.

Commercial Aviation in Argentina has developed rapidly in the last three years. This growth, however, has been from without rather than from within, and is due largely to the efforts of foreign enterprise coming into the country. While the country itself is particularly adapted for aerial transportation because of its mild temperature, prevailing atmospheric conditions, and the great stretches of flat country over which aeroplanes may fly with a great degree of safety.

In spite of this excellent situation, civil aviation, while going ahead to some extent, is making slow progress; it seems to lack the spirit and punch that is necessary to make it a success. There seems to be little endeavour to create a feeling of air-mindedness in the youth of the country. This failure must, of course, be laid at the feet of those people charged with the civil branch of aviation, and they in turn blame the Director General of Aviation, who is an Army man, General Jorge B. Crespo. They have been endeavouring for some time past to gain a separate Department of their own, but place the blame where they will, there can be little excuse for the lackadaisical manner in which they are encouraging aviation.

The Military Air Service is in a deplorable condition owing to the lack of funds and materiel. While the personnel of the Air Corps is of a high type and working hard with the materiel on hand their moral is necessarily affected by the present Administration's attitude toward the Air Corps. The newspapers here have been conducting an editorial campaign endeavouring to induce the Administration to take some action to correct the deficiencies.

It is believed that the Aeroplane factory at Cordoba has proved itself to be a failure because it can only produce such planes as those for which it has acquired the patent rights, and the only ones that can be produced at this time are the Avro training planes, and one or two types of Breguet. There is never sufficient money allotted to keep this factory going, and it is constantly behind in the payment of its employees. Within the past two weeks the President gave the factory \$650,000.00 m.n to continue running as it was on the point of closing down, but we were reliably informed by an officer of the Air Corps that this money was only part of wages and purchases already past due at the Factory.

The old machines that the Army is now using in its School are already overdue on their flying time, and the accidents at the School are increasing. While they have "washed out" a good many ships they have very fortunately had no

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serious injuries to personnel. There is a strong rumour current that the newspaper campaign is having effect and that a Commission will soon be selected to make further purchases either in Europe or the United States. In this connection none of the foreign purchasing commissions to date have been a success. It is believed that a great deal could be gained by the sale of the Cordoba Factory to private enterprise, and by inviting aeroplane concerns to come here and demonstrate their craft, submitting bids upon specifications.

The Naval Air Service seems to be making much better progress having a well established school, and the latest in materiel. They also make it a point to request opportunities for their officers to study in foreign countries.

Argentina now has the following airways, two of which carry postal matter only, while the others carry passengers and express as well:

The "Compagnie Generale Aeropostale", a French concern, and its Argentine subsidiary, "Aeroposta Argentina", have established the following lines:

Buenos Aires - Europe, in combination with the European system, carrying mail to Brasil and Europe, and passengers as far as Natal. The whole journey takes eight days. Once each week.

Buenos Aires - Chile, in combination with the European line, for mail only. Once each week.

Buenos Aires - Asuncion, a passenger and mail service taking eight and a half hours, also in combination with the European route. Twice each week.

Bahia Blanca - Comodoro Rivadavia, in combination with the railway from Buenos Aires, taking seven hours, Twice each week.

Buenos Aires - Rio Gallegos, passenger and mail service. Once each week.

The Pan-American Grace Airways, is at present operating a bi-weekly, seven day, mail service between Montevideo and New York via Buenos Aires, Santiago de Chile and the Pacific Coast. While this Company only carries mail in Argentina and Chile, it does a passenger business from Arica north. The businesslike manner and careful consideration given by the officials of this company to the officials of the countries with which they have come in contact has made their business here a popular success, and they are looked upon as a very solid business enterprise. This Company has the United States air mail contract, which as a subsidy assures them of a profit.

The Company operating the greatest number of local lines and showing the most activity is the "NYRBA" company, a subsidiary of Trimotor Safety Airways, Inc. This concern

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carries on a regular service over five routes, comprising a total of 6,000 kms., and has 12,000 kms. more under organization. During the four months ending December 31st, 1929, its fleet carried 2,678 passengers, not counting sight-seeing trips, making 461 flights, with a total distance flown of 149,000 kilometres. This Company is at present operating the following lines:

Buenos Aires - Montevideo, with two round trips daily.

Buenos Aires - Santiago de Chile, with stops at Rosario, Cordoba, Mendoza, and Valparaiso. One round trip a week.

Buenos Aires - Salta - Bolivia. This line serves the cities of Rosario, Cordoba, Santiago del Estero, Tucuman and Salta in the interior of the Republic. It connects at Yacuiba with the "Lloyd Aereo Boliviano", and provides a means of air communication between Buenos Aires and La Paz. One round trip a week.

Buenos Aires - Mar del Plata. A line much used during the summer season. More of a taxi line.

Buenos Aires - Rio de Janeiro. This route has stops at Montevideo, Rio Grande, Porto Alegre, Florianopolis, Santos and Rio de Janeiro. This line has been extended to New York. Once each week.

For the operation of all these lines, the Company disposes of a staff of specially selected pilots and a fleet stationed in Buenos Aires that include two Sikorsky bi-motor, 3 Ford tri-motor, 2 Comodoro, 2 Lockheeds, 4 Fleetsters, and 3 small training planes.

The Civil Aeronautic Club operates a passenger and mail service between Dolores, General Conesa and General Lavalle, in the Province of Buenos Aires, a distance of 170 kilometres.

While these commercial firms, through their persistence and energy, have enjoyed seeing their lines in full operation, it is believed that without a substantial mail subsidy they cannot possibly operate at a profit, and, therefore, in the case of Companies not having such a subsidy they must after a time cease to operate at all. It seems apparent that sooner or later our two American companies should consolidate, or one should be absorbed by the other. Naturally in selling out, a firm has three things to sell - its existing business or contracts, its goodwill, and its equipment and installations. Of course, goodwill is composed of the existing business and contracts, and, therefore, it would seem that the Nyrba Line must eventually be absorbed by the Pan-American Grace Airways at a great sacrifice to the former.

It would seem that in establishing commercial lines of aviation for the transportation of passengers that some attention should have been given to safeguarding the lives

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of passengers. Little, if any progress has been made in this direction. What other transportation companies could expect to commence operation without providing all the known essential means of safety. For instance in railroading we have the derailling contrivances, automatic block signal systems, lighted and guarded rights of way, etc., and in water transportation companies all manner of life saving devices, fire warning signals and constant radio communication between land and other ships, but with the airways it is felt sufficient to provide good pilots, fair ships, and take a chance.

As in the earlier days of aerial transportation in the United States the Government regulations here and in other South American countries are not very exacting, and the regulations that are in existence are very rarely enforced. The physical examination of pilots in Argentina is very thorough and complete as far as it goes, but it does not include performance with several types of planes, nor does it include an altitude test. It is merely a very good physical examination. As to materiel there are requirements and regulations relative to their care and inspection, but the actual inspection of the machines is rarely called for nor are the machines actually flown by the inspectors. This, of course, is not true of those planes operating internationally under an American license, because such planes are inspected under our own rules and regulations and by our own inspectors, but it does apply to planes flying locally under the licenses of these countries, and in the names of the local Companies.

None of the passenger planes operating between here and Chile are equipped to clear the highest peaks and are dependent upon the skill and care of the pilot to cross the Andes. So far they have been very fortunate and no serious accident has resulted. However, planes engaged in this service should have motors equipped with superchargers, and be able to reach an altitude that would clear the mountains in safety. They should also be equipped with oxygen tanks that would automatically release oxygen to the passengers upon reaching those heights requiring it. While it is true that the mountains have been crossed at a height of 16,000 feet it is a very dangerous crossing, that requires dodging the other peaks, and the passengers are solely dependent upon the personal equation of the pilot.

There has been little progress made in the establishment of any emergency landing fields over the entire route. While in Argentina a great deal of the country is very flat, and a landing can usually be effected safely, there is a great possibility that it may happen in some desolated part of the country or pampa, where medical attendance and other accommoda-

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tions would be remote, and might cause great suffering in the case of slight injuries. There are no meteorological stations within the entire route and there is no transmission of meteorological data or weather conditions excepting that published in the newspapers. The radio broadcasting of weather conditions has not as yet been established nor is it about to be established in the immediate future. When a transport plane carrying passengers takes off from one station to another it does so without advice as to the weather conditions it is liable to encounter on the journey, and it is up to the pilot once more to decide whether he will take a chance and force his way through weather conditions or turn back. No well regulated operation offices are established at terminals. Transport planes take off from one point for another and a message is sent by the regular telegraph company stating the time of take-off, the number of passengers, not including their names, but owing to the slowness of transmission of these messages by the Telegraph Company planes frequently arrive before the message, even in the case of planes leaving Santiago de Chile for Buenos Aires. The Nyrba Company has some arrangements with local telegraphers along the route to wire in to their Buenos Aires office when the plane passes overhead so that they might notify the personnel to go out to the field to meet the aeroplane. There are a few radio installations, which are believed to belong to the French Company, and which Panagra is using for the time being. There are, of course, no radio beacons or guiding stations. The lighting of the airways is still very poor, but we understand that there is some progress being made in this direction.

Undoubtedly there has been a great deal of progress made in the traffic and commercial end of establishing the business, but very little progress effected in the matter of safeguarding the business from the standpoint of well established and regulated transportation companies. This applies to all of the companies carrying passengers. While we do not believe it is their intention to convey the following impression they seem a great deal more like investment propositions than a sincere desire to establish reliable transportation companies.

It would seem that all the deficiencies noted in the foregoing paragraphs could and would be quickly eliminated if all the companies of North America were consolidated under one head, and had the benefit of the air mail contracts and subsidies.

The present American personnel of the Nyrba Company is of a very high type made up chiefly of former officers of the United States Navy. As previously stated they show

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that they have been carefully selected and are highly thought of both in Argentine Military and Civilian Air circles, as well as in the commercial field.

In connection with the inspection of aircraft it is personally known that although the Governmental regulations are slack both of the American companies are giving special attention to this matter within their own shops.

  
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Subject: Military Training

(a) Combat Training

1. FORMED 9/21/30 41930

SCHOOLS - AVIATION

The following is the new organization of the Military Aviation School:

" The school of Aviation will be attached to the Military Air base at "El Palomar" and the commander of the Base will be responsible for the discipline and administration.

" The "Dirección General de Aeronautica" will be directly responsible for the organization and instructions within the base.

" During the current year the instruction will be confined to Aviators and Pilots of the Military planes.

" All plans and details of instructions for courses will be drawn up by the Director of Aeronautics.

" Instruction to pupils taking Military Aviation for the first and second year will be developed in different courses and these will only come together when subject pertinent to both grades are dictated.

" The instruction of aviators will be directed in the most efficient manner so that the pupils on leaving the schools will be capable of carrying out all the requirements for efficient aviation. Subjects will be correctly divided in accordance with their degree of importance by the Direction of the school.

" Attention should be given the fact that practical instruction in workshops and in the open air are of the utmost importance to give experience and confidence to the pupils.

" It is contemplated at some future time to move the school of Aviation to an Aerodrome of its own and this fact will be taken into consideration in organizing the Military School for Aviation this year.

THE BOARD:

" Its organization will be according to the necessity of the service, forming only those branches strictly necessary to control the school.

CHIEF INSTRUCTOR:

" The Chief Instructor will be the head of the theoretical and practical courses given in the school. He will have at his orders an assistant and the personnel named to carry out

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these functions. He is intermediate between the Director of the school and the personnel, who depend directly upon him in all matters pertaining to professors or instructors. He will also attend to the documents for the different courses, flight statistics, technical documents and those that are to be drawn up by the Director referring to the developments and results of courses.

" Flight instruction will be given in an instruction squadron of pilots formed by sections of elementary pilots and transformation pilots.

GENERAL SERVICES: The Chief of General Services will be in charge of the care of the barracks and the installations of the school. Attend to all the internal service of the aerodrome, be in charge of the instruction of troops in military matters and also in the general service of the aerodrome.

PROGRAMS OF INSTRUCTION: The programs for the first and second course will be approved for this year by the "Direccion General de Aeronautica".

PERIODS OF INSTRUCTION: During the year the instruction of Military Aviators and pilots will be carried out in accordance with the following division in periods:

" A- One months Apprenticeship: During this time the pupil will concentrate on work in the workshops, and at the same time is given theoretical instruction corresponding to Aeronautical Material and Motors. During this time he will be taken on short adaptability flights to prove his aptitude as a flier. When this period is finished the Board of the school will advise the Direccion General de Aeronautica as to the result of the trials and the pupils may then decide whether they will continue or discontinue the course.

" B- Four Following Months : This period will be taken up with the instruction of elementary pilotage following on parallel lines the theoretical and practical instruction on subject relating to pilotage; these will be as follows for the first and second years: Aerodynamics, Aeronavigation, Electricity, Graphic Statistics, Hygiene of the Aviator, Aeronautical Material, Meteorology and Motors. At the end of this period a theoretic practical examination will be taken on the subjects above mentioned. The programs of the following subjects should have been covered entirely: Graphic Statistics, Hygiene of the Aviator, Aeronautical Material, Meteorology. The other subjects: Aerodynamics, Aeronavigation, Electricity and radiotechnics and Motors will continue all through the year's instruction. During this period the pupils will practice all the flight instruction corresponding to elementary pilotage and should fulfill the

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Individual tasks and examinations to pass on to the next part of the course.

" C- Four following months: During this period the theoretical and practical program will be completed and the course of transformation in war machines will be begun. When the period is finished a theoretical practical examination will be taken of all the subjects studied during the time. The pupils will also take examinations on the section of the course corresponding to Transformation and Combat flights. The Director of the School will establish a detailed program and plan which the pupils will follow in the Transformation Pilots course, keeping strictly to the orders of the Dirección General de Aeronautica, and presenting their plans previously to them for approval.

MARKS: Pupils will be marked numerically from one to ten. One to three points being considered "bad marks" and 4 to ten sufficient, good, better and excellent. Besides marks each professor will form a personal record of the efficiency of the pupils in the particular subject he is teaching.

COEFFICIENCY: Each subject will be effected by a coefficient:

|  |    |
|--|----|
| Aerodynamics   | 10 |
| Electricity & Radio  | 8  |
| Graphic Statistics   | 9  |
| Bombarding   | 9  |
| Photography  | 8  |
| Military Instruction   | 4  |
| Aeronautic Material  | 8  |
| Motors   | 9  |
| Aero observation & Reconnoitring                             | 9  |
| Firing and Armament  | 8  |
| Tactics & Military organization                              | 7  |
| Aeronavigation & Radio-gonometry                             | 10 |
| Physical drill   | 8  |
| Conduct  | 10 |
| Military Hygiene   | 2  |
| Tactical Instruction   | 4  |
| Metereology  | 5  |
| Pilotage   | 10 |
| Radiotelephone communications                                | 8  |
| Regulation of shooting with plane and knowledge of artillery | 9  |
| Aerial tactics and aeronautical organization                 | 9  |

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" To obtain a general average each subject is multiplied by its coefficient. The addition of these partial results will be divided by the addition of the coefficients that intervened in the operations. The result will be the general average.

ORDER OF MERIT: A partial average shall be taken from each subject with the marks obtained from interrogations, monthly examinations, final examinations, practical works, conduct (which is judged by attendance, punishments and general behaviour) and finally pilotage. The averages of each subject will be multiplied by their coefficients and the additions of the results divided by addition of the coefficients. The result will be the final marks by which the pupils merit will be judged. Should there be two or more final marks the same the order of merit will be settled by priority of service among the candidates.

COMPLIMENTARY EXAMINATIONS: Pupils who have failed in up to three subjects will be allowed to give complimentary examinations; those in the first year before entering the second year, and those in the second year within the three months following the end of the term; always providing that their final marks obtained in the manner above stated, are not below five. To be allowed to take complimentary examinations in four or more subjects it is necessary to have final average marks not below 7.

DETACHMENT FROM THE COURSE: Besides the detachment that might take place as a measure of discipline, pupils of the first year who have failed and are not entitled to complimentary examinations, will be detached from the course and returned to their original arm of the service. Pupils of the second year who are not entitled to give complimentary examinations can request the Dirección General de Aeronautica to authorize them to take the year's course over again, and this will be granted or rejected according to the antecedents of the interested party. If their request is rejected they will return to their original arm.

ATTENDANCE: No pupil should fail to attend the classes. After having failed to attend fifteen classes the Director of the School will advise the Director General of Aeronautics, who will decide if the pupil will continue his course or not, in accordance with the circumstances.

QUARTERS AND METHOD OF LIVING: The activities of the pupils make it necessary for them to live in the barracks. The Board of the School will keep track continually of the kind of life led by the pupils, and shall intervene immediately if they notice that the regulations as to the order or hygiene are not being carried out, advising them as to the necessity to normalize the regime of their lives, and if it should be found

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necessary, separate those from the course who, notwithstanding the advice received persist in living a disorderly life. Bachelor officers are obliged to live in the premises detailed to them in the barracks.

MEDICAL CARE: The pupils will follow the bulletin "Medical Advice and Hygiene of the Aviator" approved by the Dirección General de Aeronautica in all matters pertaining to their personal health.

EQUIPMENT: The Board of the School will, through the Administration, supply each pupil when he enters the school with the regulation equipment.

LEAVE: None of the pupils will leave the barracks during the working hours, without permission of the Chief Instructor. During the year's course leaves will only be granted in exceptional cases, and these will not be for more than ten days and, the reasons given will be varified by the Dirección General de Aeronautica, which will approve or disapprove them.

BRIEF COURSES FOR INSTRUCTORS: The Commander of the Pilot Squadron will take a brief pilot's course during the first month of instruction to apprentice pilots, which course will be taken by them in order to regulate the methods of instruction, judgement, ideas on manoeuvres and to acquire practice and experience.

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The Program of instruction for the first year Course in the Military Aviation School is the following:

SUBJECTS:

Aerodynamics

Aeronavigation:

Theory:

Aeronavigation  
Study of the Atmospheric ocean  
Navigation, dead reckoning  
Observed Navigation  
Aeronavigation charts  
Compass  
Nocturnal Navigation

Ground Practice

Flight Practice (As observing officer)

Bombing

Electricity and Radio-Technic

Graphic Statics

Photography:

Theory:

Materiel  
Optical photography  
Chemical photography  
Organization of Photographic Section  
Principal geometric relations to photographic area.  
The object in taking different classes of photographs  
Basic elements of Steriscopes  
Rudiments of oblique photography  
Rudiments of Aero and cartographic Photography

Practice:

Ground photography  
dark room  
Laboratory  
Aerial photography

Military Hygiene and hygiene of the Aviator

Aeronautical material

Theoretic Instruction

Frame of the plane  
different parts of the plane  
Military equipment of the different planes in the service

Practical Instruction in the Work Shops

Proving the regularity of the controls  
Regularity of the stabilizers  
Changing of amortizers, wheels, tyres and tubes

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(a) Combat Training (Cont'd)

Changing tail skid  
Wings  
Dismounting the wings of the tail  
Dismounting the landing gear  
Preparation of the different elements  
of the plane for transportation  
Mountings of the plane  
Corrections for centering balance to  
compensate for the small abnormalities  
in the flight  
Storage of service materiel in use

Meteorology:

General knowledge of meteorology and climate  
conditions. Tendencies and problems that go  
to prove them.

Statistical meteorology:

Weather conditions and visibility.  
Appropriate weather to fly in. Clear  
spaces among the clouds. Precautions  
to be taken in these clear spaces

Meteorological phenomena:

Their origin, influence on aviation.  
Atmospheric electricity

Dynamic Meteorology

Aerology

Motors:

Theoretical Instruction  
Practical Instruction in Work Shops  
Particularly the Hispano Suizo Motor

Elementary Pilotage:

Preliminary instruction in double control  
Horizontal flight and in a straight line  
ascending angle and minimum speed  
Gliding in a direct line  
Take off  
Landing and appreciation of distance  
Ascent in bank; Demonstration of the correct  
manner to use the controls and indication of  
the references  
Banking with the motor on or off with inclina-  
tions up to 70°  
Spinning. Loss of speed  
Landing  
Flying alone  
Second part of the instruction on double control:  
Ascent in bank  
Flights under varied conditions and weather  
increasing the difficulties in accordance with  
the progress of the pupil  
Landing transversally to the direction of the  
wind:  
Engine trouble near the ground  
Forced landings under difficult cir-  
cumstances

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Low flying  
 Acrobatic stunts  
 Looping the loop - Half turn - Immellmann turn  
 Precautions to be taken when taking a plane  
 after a landing on unknown ground  
 Formation flights  
 Transformation pilotage  
 Twilight flying  
 Progressive preparatory transformation flights  
 for night flying carrying all instruments on  
 board.  
 Flights based on instruments. Preparation  
 flights for flying among clouds carrying all  
 the instruments on board

## Combat piloting:

Minimum time that will serve as a guide in the training of pilots

| PILOTING         | WORK TO BE CARRIED OUT           | TIME     |
|------------------|----------------------------------|----------|
| A Elementary     | 1 - Double control               | 18 hours |
|                  | 2 - Training according to Charts | 17 "     |
| B Transformation | 1 - Double control               | 2 "      |
|                  | 2 - Training according to charts | 20 "     |
|                  | 3 - Twilight flights             | 2 "      |
| C Combat         | 1 - Adaptability                 | 1 "      |
|                  | 2 - Flying alone                 | 3 "      |

## Radio Communications:

Theory:Practical Instruction on the ground

## Aerial Tactics:

Theory:

General Instruction  
 Organization  
 Formations  
 Training  
 Principles of aerial logistics  
 Orders

Practice:

Preparatory exercises to give confidence  
 and expertness to the pupils (In dual  
 control, school or transformation  
 planes)  
 Intermediary Exercises to teach the  
 students the simple evolutions. Banking  
 quickly to take into account the cor-  
 responding corrections (in dual control  
 transformation planes the attacker using  
 photographic machine guns)  
 Advanced exercises with a certain liber-  
 ty of action preparing the students for

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free combat. (dual control transformation or combat planes, using photographic machine guns)

Firing and Armaments:

Theoretical Instruction:  
Firing. Armaments  
Practical Instruction  
Firing  
Armament  
Ground firing  
Anti-aircraft  
Firing in flight.

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The following is the course to be taken by the pupils of the Second year in the School of Military Aviation in the Argentine Army:

SUBJECTS:

## Aerodynamics:

- General provisions, applied to the wings of the plane
- Horizontal flight
  - Necessary speed
  - Traction
  - Power
- Ascending flight
- Gliding flight
- Banking
- Stability

## Astronomical &amp; Radiogonometrical Aeronavigation:

- Introduction - Foundations
- Classification
- Time and Conversion of time
- Correction of altitudes
- Determination of position
- situation by observation of the Sun
- Meridians and Circum-meridians
- Situation by observation of the stars
- Radiogonometry
- Practical Instruction:
  - Using instruments on the ground and in flight

## Bombarding:

- General Instruction
- Theory of Aerial Bombardment
- Regulations Bombing sight S.T. Ae.
- Method of firing, time or indirect
- Method of direct firing
- Errors likely to be made with Sight S.E. Ae.
- Ground instruction - Practical.
  - Bomb explosives and devices
- Description and handling of instruction materiel - Laboratory
- Dark Room
- Marking place where bomb hits on maps
- Exercises
- Flight instruction

## Electricity and Radio Technic:

- Electric Current
- Rectifying valve
- Detecting valve
- Amplifying Valve
- Circuits

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Bearings by radio  
 Propagation of electrical waves  
 Radio Stations

## Photography:

Military application of aerial photography  
 The Mission of photography  
 Identification  
 Interpretation of Military Photography  
 Markings on photographs  
 Correcting Aerial photographs for the construction of maps  
 Taking of aerial photographs  
 Instruction in the Air  
 Instruction in the Laboratory  
 Campaign Instruction

## Hygiene of the Aviator:

## Aeronautical Materiel:

General Information  
 Analysis, study, practice  
 Instrumental  
 Instruction in Work Shops  
     Breguet Plane  
     Dewoitine Plane

## Metereology

## Motors:

Carburatation  
 Sparking system  
 Lubrication  
 Cooling system  
 Aviation motors  
 Equilibrium  
 Motor regulation  
 Practical Instruction in the Work Shops  
     Hispano Suizo 450 H.P. motor  
         General system  
         Carburatation  
         Sparking  
         Lubrication  
         Cooling system  
         Propeller  
     Lorraine Dietrich 450 H.P. Motor  
         General System  
         Carburatation  
         Sparking  
         Lubrication  
         Cooling system  
         Propeller

## Aerial Observation and reconnoitring

Theory:

General characteristics, different missions, use  
 Elements necessary and ways of fulfilling said missions.

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Liberty of action in Observation Aviation  
Characteristics of observation from a plane  
Means of Communication with ground  
Wording of orders  
Cooperation with Infantry  
Practical Instruction in Laboratory  
Practical Instruction on flight

## Organization

Radio Telegraphic Communications

Theoretical Instruction

Practical Instruction on the ground

Practical Instruction in the planes

Regulation of firing with plane and knowledge of Artillery

Theoretical Instruction

Practical Instruction in Laboratory

Practical Instruction on flight

Work in cooperation with Artillery

## Resistance of Materiel

Aerial Tactics and Aeronautical Organization

Theory:

General principles

Individual combat in the air

Combat in air against different elements

Collective combat in the air

Particular cases in aerial combat

Combined aerial tactics

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isolated two seaterPursuit squad against an isolated  
pursuit planeOpen combat, pursuit plane against a  
two seater, single seater pursuit and  
a multiplaza plane.Pursuit formation in attack on obser-  
vation or bombing groups. Combat  
between two squadrons.

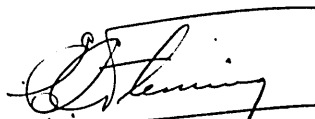
## Tactics

Firing and Armaments:

Theoretical Classes

Practical Instruction on the ground

Firing in the air.



From: M.A. Argentina

Report No. 4166

May 28, 1930.

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G-2 Report

ARGENTINA (Aviation - Military)

Subject: School System.

Military Aviation Course Second Year 1935.

The following is the organization of the School of Military Aviation:

- 1.- During the military year, the School of Aviation will be attached to the Military Air Base at El Palomar, and the Commander of the Base will be responsible for the discipline and administration thereof.
- 2.- The General Division of Aeronautics will be directly responsible for the organization and instruction within the Base.
- 3.- During the present year the instruction will be confined to Aviators and Pilots of Military planes.
- 4.- All plans and details of the courses will be drawn up by the Director of the School of Aviation in accordance with the instructions issued by the General Division of Aeronautics and the regulations in force.
- 5.- Instruction of students participating in the Military Aviation courses, first and second years, will be given in different courses and these will be brought together only when subjects pertinent to both courses are taught.
- 6.- The instruction of Aviators will be carried out in the most efficient manner possible so, on leaving the school, the students will be capable of complying with all the requirements for an efficient aviator.
- 7.- The Direction of the School will divide the subjects in accordance with their degree of importance.
- 8.- In drawing up the program of studies, the Director of the School will bear in mind the instruction of Aviators and Pilots must be carried on in a practical manner, i.e., theoretical teaching must give the student only the basic knowledge necessary for the carrying out of practical work.
- 9.- He will give attention to the fact that practical instruction in workshops and in the open air are of the utmost importance for experience and confidence.
- 10.- It is contemplated in the near future to move the Aviation School to the vicinity of Cordoba where it will function autonomously. The organization of the Military School of Aviation is as follows:
  - A) Director
  - B) Chief Instructor
  - C) Administration
  - D) General Services.

The Director

- 11.- Its organization will be in accordance with the necessity of the service, forming only those branches strictly necessary to control the School.

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Chief Instructor

12.- The Chief Instructor will be the head of the theoretical and practical courses given in the School. He will have an assistant and the personnel to carry out these functions. He is the intermediate authority between the Director of the School and the personnel - such as professors and instructors. He will attend to the administration of the different courses, flight statistics, technical documents and those to be drawn up by the Director with reference to the development and the result of the courses.

13.- Flight instruction will be given in an instruction squadron of Pilots formed by sections of Elementary Pilots and Transformation Pilots.

General Services

14.- The Chief of General Services will be in charge of Barracks and the installations of the School. He will be in charge of the instruction to troops in military matters and also of the general services of the airdrome.

Programs of Instruction

15.- The programs for the first and second course will be those approved for this year by the Direction General of Aeronautics.

Periods of Instruction

16.- During the present year, the instruction of Military Aviators and Pilots will be carried out in accordance with the following divisions:

A- One Month Apprenticeship

During this time, the student must concentrate on work in the workshops and at the same time theoretical instruction in Aeronautical Material and Motors will be given.

During this time he will be taken on short adaptability flights to prove his aptitude as a flier.

When this period is finished the Director of the School will advise the Director General of Aeronautics as to the result of the trials and the students may then decide whether they will continue the course.

B- Four Subsequent Months

This period will be confined to the instruction of Elementary Pilotage following on parallel lines the theoretical and practical instruction on subjects directly related to pilotage for the first and second year, as follows:

|                 |                        |
|-----------------|------------------------|
| Aerodynamics    | Hygiene of the Aviator |
| Aeronavigation  | Aeronautical material  |
| Electricity     | Meteorology            |
| Graphic Statics | Motors                 |

At the end of this period a theoretical practical examination will be given on the subjects mentioned above and the full program of the following subjects will be complied with:

|                        |                       |
|------------------------|-----------------------|
| Graphic Statics        | Aeronautical material |
| Hygiene of the Aviator | Meteorology           |

The other subjects:

|                |                       |
|----------------|-----------------------|
| Aerodynamics   | Electricity and Radio |
| Aeronavigation | Motors                |

will continue throughout the year of instruction.

During this period the students will practice the flight instruction corresponding to Elementary Pilots' course. They will complete the individual tasks and examinations in order to enter the next part of the course.

#### C- Four Following Months

During this period the theoretical practical program will be completed and the course of Transformation in war machines will be begun.

At the end of this period a theoretical practical examination will be taken in the subjects studied during the time. Students will be examined with respect to the part corresponding to Transformation and Combat flights.

The Director of the School will establish a detailed program and plan which the students will follow in the Transformation Pilots' Course, keeping strictly to the orders of the Director General of Aeronautics and presenting them to the latter for approval.

#### Grading

17.- Students will be given numerical marks on their work and personal record, in accordance with the following classification:

| (Marks) | Studies       | Record    |
|---------|---------------|-----------|
| 0       | Failed        | Bad       |
| 1       | Postponed     | Bad       |
| 2       |               |           |
| 3       |               |           |
| 4       | Sufficient    | Mediocre  |
| 5       | Good          | Good      |
| 6       |               |           |
| 7       | Very Good     | Very Good |
| 8       |               |           |
| 9       | Distinguished | Excellent |
| 10      | Excellent     | Excellent |

18.- Besides these marks each professor will keep a personal record of the efficiency of the students in all the subjects.

#### Coefficiency

19.- Each subject will carry a coefficient, as follows:

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|---|----|
| Aerodynamics .....  | 10 |
| Electricity and Radio .....   | 8  |
| Graphic Statics .....   | 9  |
| Bombarding .....  | 9  |
| Photography .....   | 8  |
| Military Instruction .....  | 4  |
| Aeronautic Material .....   | 8  |
| Motors .....  | 9  |
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| Physical Drill .....  | 8  |
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| Military Hygiene and Hygiene of the Aviator ..                          | 2  |
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| Radiotelephone communications .....                                     | 8  |
| Regulation of shooting with plane and know-<br>ledge of Artillery ..... | 9  |
| Aerial tactics and aeronautical organization .                          | 9  |

20.- To obtain a general average each subject is multiplied by its coefficient. The addition of these partial results will be divided by the addition of the coefficient that was used in the operation. The result will be the general average.

#### Order of Merit

21.- A partial average shall be taken from each subject with the marks obtained from interrogations, monthly examinations, final examinations, practical work, conduct (which is judged by attendance, punishments, and general behaviour) and finally pilotage, in accordance with the scale established under No.17 of the present Order.

22.- The averages of each subject will be multiplied by its coefficients and the addition of the results divided by addition of the coefficients. The result will be the final marks by which the students' merit will be obtained.

23.- Should there be two or more equal final marks, the order of merit will be settled by priority of service among the candidates.

#### Complementary Examinations

24.- Students who fail in up to three subjects will be allowed to take complementary examinations, students of the first year may do so before entering the second year and those of the second year within three months following the end of the term, always provided that their final average marks are not below 5.

25.- To be allowed to take complementary examinations in four or more subjects, the final average marks must not be below 7.

#### Detachment from the Course

26.- Besides the detachment from the course that might take place as a measure of discipline, students of the first year who have failed and are not entitled to complementary examinations, will be detached from the course

and returned to their original arm of the service.

Students of the second year who are not entitled to pass complementary examinations may request the Director General of Aeronautics to authorize them to take the year's course over again and this will be granted or rejected according to the personal record of the interested candidate. If the request is rejected the student will return to his original arm.

#### 27.- Attendance

No student should fail to attend the classes. After having failed to do so for fifteen days, the Director of the School will notify the Director General of Aeronautics who will decide whether the student will continue his course, in accordance with the circumstances.

#### Quarters and Method of Living

28.- The activities of the students make it necessary for them to live in the Barracks. The Board of the School will keep track continually of the kind of life led by the students, and shall intervene immediately if it is noticed that the regulations concerning order and hygiene are not observed; it will call the attention of the students to the advisability of normalizing their method of living, and should it be found necessary, it will separate from the course those who, notwithstanding the advice received, persist in living a disorderly life.

29.- Bachelor officers are required to live in the premises assigned to them in Barracks.

#### Medical Care

30.- The students will follow the bulletin "Medical Advice and Hygiene of the Aviator" approved by the Director General of Aeronautics in all matters pertaining to their personal health.

#### Equipment

31.- The Board of the School will, through the Administration, supply each student with the regular equipment when he enters the School.

#### Leave

32.- None of the students will leave the Barracks during the working hours, without permission of the Chief of Courses.

33.- During the year's course leaves will be granted only in exceptional cases, and these will not be for more than ten days and the motives thereof will be verified by the Director General of Aeronautics, who will approve or disapprove them.

#### Brief Courses for Instructors

34.- The Commander of the Pilot Squadron will conduct a brief pilot's course during the first month of instruction to apprentice pilots - which course shall be followed by the instructors with a view to regulating the methods of instruction, judgment, ideas on manoeuvres, and also to acquiring practice and experience.

Colonel - Director General  
of Aeronautics

Course of Military Aviators.

--Second Year--

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#700-b

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Dewoitine Plane

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Dismounting of the fuselage, precaution and method to be followed  
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Regulating  
Changing of a wing  
Changing of a strut  
Changing of an aileron  
Regulating or adjusting the airplane  
Centering corrections to compensate small flaws in flying.  
Periodical cleaning, inspection and lubrication.

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METEOROLOGY

Military meteorological organization  
Meteorological parts  
Field meteorological stations  
Instrumental; method of work  
Weather predictions on short and long notice  
Difficulties connected therewith  
The application of meteorology to air navigation  
Weather chart  
Elements for its preparation; reading thereof and its deductions.  
Different kinds of isobars  
Information service  
Use of wireless for the prediction of weather conditions  
Its benefits  
Statics and atmospheric; study of same  
Preparation for flight; elements connected with the preparation thereof;  
    precautions to be taken by the pilot  
Climate and flying material  
Factors affecting the material and the pilot  
Argentine climatology by regions  
Wind characteristics in the different zones of the country  
Continental climatology  
Isobars and wind systems in the Atlantic and the Pacific  
Navigation routes; how they must be covered.

M O T O R S

Carburation

Definition

Formation of the detonating mixture

Study of carburetors:

(Zenith  
Automatic: (Caudel  
(Solex  
Non-Automatic: (Tampier

Feeding of the carburetors

Canalizations

A. M. Pumps

Ignition

Generalities

Conditions of the good ignition

Study of the low and high pressure magneto

"Delco" ignition

Different types of magnets:

Scintilla  
Bosch  
Marcelli  
S.E.V.

Lubrication

Lubrication circuits

Splash and forced lubrication

Oil pumps

Cooling

Circuits

Different systems, thermosyphon or pump

Water pump

Radiators

Aviation motors

Different kinds, fixed or revolving

With cooling with water or with air

Comparative study of each one and progress achieved

Balance

Generalities

Regulating

Motor flaws

Practice in the workshops

Hispano-Suizo Motor 450 C.V.

From: M.A. Argentina

Report No. 5340

Date: March 30, 1956.

Generalities.

Features of the motor  
Regulating  
System  
Consumption  
Nomenclature of its parts.  
Starting  
Testing the motor  
Temperature, pressure, etc.  
Irregularities and flaws  
Changing of valve springs and disks  
Changing of body of cylinder  
Precautions to be taken in adjusting the distribution  
Mounting and dismounting of valves  
Changing of pistons, rings and bolts  
Vibrations, their causes and localization thereof  
Changing the motor; precautions to be taken and method to follow  
Mounting and verification tests.

Carburation

Flaws in the carburetors and localization thereof  
Cleaning of the pulverizers  
Regulating of low speed  
Change of carburetors

Ignition

Regulating the magnetoes  
Advancing the spark  
Breakers and distributors  
Cleaning and regulation  
Connection of contact cables, spark plugs and mass

Lubrication

Oil charge  
Changing of joints  
Pressure gauge and tubes

Cooling

Changing the water pumps, pipings  
Changing the radiator

Screw propeller

Changing screw propellers  
Regulating

Lorraine Dietrich Motor 450 C.V.

Generalities

Characteristics of the motor  
Regulating  
System  
Consumption  
Nomenclature of its parts  
Starting

Test on the spot  
Temperatures, pressure, etc.  
Regularities and flaws  
Changing valve-springs and lifts  
Changing of cylinder  
Precautions to be taken in regulating the distribution  
Valve mounting and dismounting  
Changing of pistons, rings and bolts  
Vibrations; their cause and localization  
Changing the motor; precautions to be taken and process to be observed  
Mounting and verification tests.

Carburation

Flaws in the carburetors and localization thereof  
Cleaning of pulverizers  
Regulating slow speed  
Changing carburetors

Ignition

Regulating the magnetoes  
Advancing the spark  
Breaker and distributor  
Cleaning and regulating  
Connection of contact cables, spark plugs and mass

Lubrication

Oil load  
Change of joints  
Manometers and tubing  
Regulating the pressure

Cooling system

Tubing, tires, etc.

Propeller

Changing the propeller  
Regulating



AERIAL OBSERVATION AND RECONNOITERING

THEORY

Importance of Observation Aviation in the army, by day and night.

Object of Observation Aviation and missions assigned thereto.

General Characteristics of the different missions and principles of the use thereof:

- a) In the war of movement, attack, defense, stabilized front and displacement of forces
- b) In the war of position, attack and defense
- c) In cooperation with Artillery and Infantry
- d) In its intervention in the fighting; attack against objectives on land
- e) Mission to establish liaison
- f) Aerial combat

Means to execute these missions and manner to perform them:

- a) Choice of an observer
- b) Material; armament, airship and equipment
- c) Preparation of the missions in their material and tactical phases.
- d) Report after the execution of the mission regarding its material and tactical aspects.

Freedom of action of Observation Aviation:

- a) Enemy aerial activity
- b) Defense against airships
- c) Ground available for landing
- d) Atmospheric conditions
- e) Means of contact communications

Characteristics of observation from an airplane and execution of the missions.

- a) Visual
- b) Photographic
- c) By night

Means of contact

- a) From airplane to the ground
- b) From the ground to the airplane

c) Between Commands

Drawing up instructions:

- a) To teams
- b) To Squadron Command
- c) To Group Command

Relation and coordination between same.

Cooperation with Infantry:

- a) Missions of infantry airplanes
- b) Means of contact and cooperation with the troops
- c) Methods to be observed in the execution of these missions

Cooperation with Cavalry (Light group of observation) :

- a) In reconnoitring
- b) Means of communication
- c) In combat

Practice in the Laboratory

Knowledge of the object and mechanism of the works in the Observation Laboratory

Exercises of visual observation of objectives, and making up reports. These exercises will be repeated by increasing the difficulties in observation.

Exercises on the mechanism and execution of missions:

- a) Reconnaissance
- b) Communication
- c) Infantry
- d) Combat against terrestrial objectives.

Drawing up of messages and reports based on exercises

Exercises based on situation, practice in the making up of instructions, missions and preparation of the teams; as Chief of Group, Squadron Commander and Chief of team.

Compilation and interpretation of messages and preparation of situation charts, with reports.

Note: In the work done in the Laboratory, endeavor will be made to develop the tactical judgment of the observer, his initiative and the proper use of means for the better fulfilment of his mission.

Practice in Flight

Exercises of observation of the appearance and characteristics of the surface of the ground. These exercises will be the object of a graphic and explanatory report.

Visual exercises of objects and military objectives, gradually increasing the altitude and studying the deformations due to the different positions of the airplane; perspective.

Exercises of observation of zones, with reports drawn up in accordance with the military importance or value of the objectives observed.

Missions of close exploration and of combat, with the drawing of sketches

5-2 Report

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of certain sectors. These exercises are intended to demonstrate the method followed by the team and the intelligence thereof in the execution of its mission.

Throwing and reception of messages. These exercises will be executed in connection with those in which the Observer must draw up or produce a report during his flight.

Visual and photographic reconnaissance over real troops, drawing up messages and making sketches, exploration both tactical and strategic.

Missions of Infantry Aviation to be carried out with the cooperation of troops.

Missions of combat against terrestrial objectives, effecting shooting and bombardment jointly with aerial tactics under the direction of professors of each branch.

Missions of connection.

ORGANIZATION

Doctrinarian generalities of organization;

History of organization in our country;

Military organism, institutions, recruiting, and arrangement of forces;

The Command and its organs, the great groupings, material, fortifications;

Our organization, the organic plan; project of real organization and project of ideal organization;

Organization of mountain detachments and Army formations; echelons and extent;

Organization, characteristic, form and arrangement of units of Army Division;

Organization, characteristics, form and arrangement of units of Cavalry Division;

Organization of Military Aviation;

Regional organization, Military Districts;

Study of the principal frontiers (North-East and West);

Study of Law 4707;

Reserve Officer;

Article 9; military appraisement;

Permanent Staff;

Practical Works:

- a) Written works;
- b) Home work;

RADIOTELECOMMUNICATIONSTHEORETICAL INSTRUCTION

General concepts on connection and transmission;

General concepts on the importance of communications in Aviation;

Organization and utilization of the Communication Sections of the different combat units of Aviation:

- a) Observation Group
- b) Light group of Observation
- c) Pursuit Group
- d) Combat Group
- e) Bombardment Group
- f) Field Army Aviation
- g) Command Army Aviation

Different means of transmission in general and especially used in Aviation;

- a) Principal means
- b) Auxiliary means

Call signals and wave lengths in Radio-aerial system;

Points of view to be taken into account by a Chief of Aviation for the establishment of connections.

PRACTICAL INSTRUCTION ON LAND

Functioning and management of airplane radiotelegraphic stations;

Knowledge and practice of the installation of radio-stations on the plane;

Installation and functioning of an antennae;

Telephone commutators, telephones and placing of lines;

PRACTICAL INSTRUCTION IN THE PLANE

Transmission of radiotelegraphic despatches in plain language;

Transmission of radiotelegraphic despatches using abbreviations according to regulations;

Reception on board of radiotelegraphic despatches in plain language;

Reception on board of abbreviated radiotelegraphic despatches;

Common flaws in the stations and way to correct them while flying;

Practice in signalling with luminous rockets from the plane;

Practice in throwing of ballasted despatches into the Command post;

Surveying parts while flying;

Practice of reception while flying of signals with frames and luminous signals;

Practice of transmission; minimum requisite 20 words per minute;

Practice of reception by sound: minimum requisite 10 words per minute.

FIRING REGULATIONS AND MANOEUVRES OF ARTILLERY

THEORY

Different specialities of Artillery; its organization and composition;

Use and efficacy of Artillery;

Division and relations of command;

Exploration and security;

Marches;

Camps;

Meeting engagements;

Pursuit;

Interruption of the combat and retreat;

Attack against positions:

- a) Attack in the war of movement
- b) Attack in the war of position

Defense

- a) In the war of movement
- b) In the war of position

Defense of permanent fortifications

Ammunition; different projectiles and calibers, appearance of explosions during observation

Shooting:

- a) Preparation
- b) Observation
- c) Adjustment
- d) Formation of bracket
- e) Verification of "
- f) Fire for effect
- g) Precise and rapid adjustment
- h) Front covered
- i) Changing target

Method of firing:

- a) Firing with shrapnel
- b) Firing with shell

Particularities of shooting on mountainous ground;

Radio stations; their composition, organization and functioning.

PRACTICE IN THE LABORATORY

Knowledge of the laboratory in the part relative to artillery fire;

Execution of missions of Artillery airplanes;

- a) Reconnaissance of targets or fixed objectives,
- b) Missions of vigilance;
- c) Missions of adjustment by using all the methods of observation.
- d) Fire for effect, destruction, etc. efficacy of same;
- e) Simultaneous adjustment.

Organization, functioning and role of radio station;

Note. The instruction must progress gradually, developing the judgment of the teams with regard to the proper utilization of means of communication and absolute intelligence with all the means of coordination between airships and the Command.

PRACTICE WHILE FLYING

Simulated works:

Reconnaissance of targets and drawing up of despatches;

Observation of firing with petards;

Execution of complete exercises of simple and simultaneous adjustments.

Complete exercises of missions of vigilance with shifts;

Missions of Artillery airplanes, using the methods and elements required by the situation;

Note. In simulated work preferential attention must be given to the proper utilization of means available and established methods for the correct way of adjusting.

Work in cooperation with the Artillery

The plan of execution of this part of the instruction will depend on the facilities and opportunities offered by the Artillery units.

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RESISTANCE OF MATERIAL

Generalities

Simple tension

Compression

Cut

Torsion

Moments of inertia

Plane and simple flexion

Reaction of support

Graphic study of beams submitted to plane flexion

Plane articulated systems; applications.

From: M.A. Argentina

Report No. 5340

Date: March 30, 1936.



AERIAL TACTICS AND AERONAUTICAL ORGANIZATION

Theory

General Principles

Aerial war  
Objectives  
Precepts  
Mass  
Saving of forces  
Freedom of action  
Surprise  
Security  
Simplicity  
Cooperation

Individual aerial combat

General principles of individual attack;  
Preparation and execution of the attack; different phases  
Characteristics of single control plane against single control pursuit  
planes, dual control planes, cooperation planes and bombarding planes.  
Characteristics of the dual control plane in the attack  
Attack of the dual control plane  
Combat of multi-control planes

Aerial combat against different elements

Attack against a parachute; captive balloons, etc.  
*Attache's note.* This would seem to be copied from German practice.  
Attack against dirigibles  
Fight against terrestrial and naval enemies  
Individual bombardment  
Torpedo airplanes  
Telebombs

Collective aerial combat

Passing from individual combat to collective combat  
General principles of a collective attack  
Formation of the patrol in the attack  
Pursuit formations  
Battle formations  
Bombardment formations  
Combat between single-control plane squadrons  
Combat of a single-control plane squadron against dual control planes  
The dual-control plane squadron in aerial combat  
Combat of multi-control planes  
Combat of Groups  
Combat of Fleets; aerial battle

Special cases of aerial combat

Nocturnal aerial combats  
Rear guard combats  
Combats on escort service  
Combat against terrestrial and naval enemies  
Collective bombardments

Combined aerial tactics

Use of aerial forces; general considerations  
During mobilization and concentration

After concentration until contact is established  
During the deployment and the combat  
Principles governing the aviation units in the war of movement and of position  
Period after the combat; persecution and retreat

### Practice

#### Series A - Isolated pursuit plane against isolated dual control plane

Method to be followed in the attack and in the defence in order to  
utilize the elements in the aerial ocean  
Exercises to discover or recognize the enemy  
Exercises of approach  
Exercises of close attack

#### Series B - Chasing patrol against isolated pursuit plane

The dual-control flies on a straight line, the chasing patrol follows it  
at a higher altitude; numbers 2 and 3 start the attack aiming at the  
flanks without thrusting in order to attract the firing of the dual-  
control; then the guide attacks towards the rear of the dual-control  
plane.

The dual-control plane flies on a straight line, the patrol moves towards  
the opposite direction and attacks in the same way as in the previous  
exercise after describing a half-turn with its planes.

#### Series C - Free combat - Pursuit plane against dual-control plane, single- control pursuit plane and multi-control plane.

The single-control plane will seek its dual-control adversary, within a  
sector of from 5 to 6 kilometres, where both have full freedom of  
action, and will act as follows:

- a) to discover and recognize the enemy
- b) to approach it
- c) to attack it by observing, in the different cases, the various  
methods prescribed by aerial tactics for a single control plane.

The same exercise between pursuit single-control planes.  
Attack against a multi-control plane.

#### Series D - Pursuit patrol against platoon of dual-control or multi-control planes.

To execute in succession:

The approach

The attack of the patrol

Simultaneously, the defense of the platoon of dual-control or  
multi-control planes.

#### Series E - Combat between two squadrons

Exercises of approach, formation and distribution of firing  
Exercises of manoeuvres to be executed by the units in formation in  
order to obtain superiority in firing.  
Exercises of combat of escort, protection, etc.

Note: In each case concrete indications, instructions, and observations,  
etc., will be given.

TACTICS

War; objectives, causes.

The notion of a war footing

Prevision of war; its preparation

Organization, strategy, tactics

Synthetic idea based on plan of operations; concentration

Fundamental principles of the conduct of war

Offensive, surprise, saving of forces, freedom of action, moral factors.

**Battle**

Idea on tactics; preparation; development, appreciation of the situation;  
resolution; orders; general provisions

Command and its means; order of battle; the order; aviation orders;  
news and messages.

Aviators' messages

March; stationing; security

Pursuit aviation; bombardment, observation and battle

|                   |  |
|-------------------|--|
| Infantry, cavalry | ) Mission, characteristics, efficacy, how they fight   |
| and               | ) Ground, light, time                                  |
| artillery         | ) Conduct, extent, march, advance, combat, cooperation |
|                   | ) among elements                                       |
|                   | ) Cooperation of the other branches                    |
|                   | ) Detailed use of the units                            |

Engineers, pontoon sappers, railway, communications

Aviation

Meeting engagements

Defence

Rear Guards

Practical exercises:

- a) Written exercises or topics on the chart
- b) Drawing up of orders and messages

## FIRING AND ARREST

## THEORETIC CLASSES

## PRACTICE ON THE GROUND

## AERIAL FIRING

Evolution of argument  
Influence of the cha-  
racteristics of arms  
in aerial tactics

### Characteristics of fixed arms

Conditions of function-  
ing and ballistic con-  
ditions required by  
fixed machine-guns

Present tendency

Aiming apparatus,  
characteristics in the  
use thereof; advantages  
and disadvantages of  
oblique systems and  
ring systems

Shooting problems:  
Correction of target  
Ammunition; different  
types; their character-  
istics and use

Synchronizers; study of the advantages and disadvantages of the rigid, flexible and liquid systems

Relation between the  
number of revolutions of  
the motor and the  
shooting velocity

### Influence of the syn- chronizer in the shoot- ing velocity

Dispersion of the shot  
through the propeller  
& different speeds of  
the motor system;  
constant and varying  
velocity

### Installation of ranges and accessories

Their installation in the plane and accessories for the adaptation of the different systems of synchronizers

Demonstration on wooden disc  
placed in the mass of the  
screw propeller

Exercises on demonstration  
with targets at 25 and 30  
meters

Exercises of approach  
and aim with raising  
of ring

Aiming exercises checked with photomachine guns at distances of 300, 200 and 100 metres.

Real shooting against  
terrestrial objectives:

- a) on silhouettes of  
life-size planes  
(Fabric)
- b) against military  
objectives
- c) against shadows of  
planes

Real shooting against  
aerial objectives:  
a) on sleeve in tow  
b) on fixed aerial  
targets

From: M.A. Argentina

Report No. 5340

Date: March 30, 1936.

|   |  |
|---|--|
| Synchronization box adapted to the Hispano-Suizo and Lorraine motors                  | ) Verification, and regulating of the box and percussion of the weapon   |
| Preparation of the plane for the execution of real shooting                           | ) Mounting and dismounting of the weapon for shooting across the propeller and accessories                       |
| Preparation of the Pridcau ribbon with perforating, incendiary and tracing ammunition | ) Execution of charges and preparation of the gun to fill shooting requisites                                    |
| Interruptions; their causes and way to correct them                                   | ) Practical exercises to correct interruptions while motor is functioning, using only one hand                   |
| Targets for adjusting and executing the shooting                                      | )  |
| Conditions to be fulfilled and preparation of a field for shooting                    | ) Practical works in the shooting gallery  |
| a) Against terrestrial objectives   | ) a) Preparatory shots with the synchronized weapon, mounted on the plane, against adjusting target              |
| b) Against sleeve in tow shooting from another plane                                  | ) b) Group shooting correction of target   |
| c) Against sleeve shooting from the ground  | ) Real shooting with gun against reduced silhouette of air-plane and at distances of 20, 40, 100 and 200 meters; |
|   | ) Requisites: 50% of the impacts must be found within the 50% zone   |
|   | ) c) Shooting with photo-machine gun from the ground against planes.   |

Source: Translation of Instruction Pamphlet issued by Air Corps.

*Frederick D. Sharp*  
 Frederick D. Sharp  
 Captain, G.S.,  
 Military Attache.

From: M.A. Argentina

Report No. 5340

Date: March 30, 1936.

G-2 Report

ARGENTINA (Economic)

Subject: Industrial Aviation - Development  
and Uses

6-1 2076-112 934  
JUL 11 1934  
WAR DEPARTMENT  
5100

(c) Activities of Foreign Interests in the Establishment  
and Operation of Industrial Aviation.

A report has been prepared by the Commercial Attaché in Buenos Aires for the State Department which it is thought might be of interest as a summary on air transport lines in Argentina. Although the bulk of this data has been reported from time to time by this office, it has been thought that it might be advantageous to have a copy of this summary as a reference.

Extracts from the report are as follows:

The Establishment of Air Transport Lines  
in Argentina.

The names of the foreign air transport lines in Argentina and their nationalities are as follows:

|                            |            |
|----------------------------|------------|
| Pan American Airways       | - American |
| Pan American Airways       | - American |
| Cia. Air France            | - French   |
| Sindicato Condor Ltda.     | - German   |
| Cia. Aeropostal Argentina- | French.    |

The Pan American Airways operates an airmail line from Miami, Florida, down the East coast of South America to Buenos Aires, and the Pan American Grace Airways operates an air mail line from Miami, Florida, via the Panama Canal and the West coast of South America to Santiago, Chile, and from Santiago overland to Buenos Aires. These two companies are closely affiliated in the United States and took over an air mail line which was previously established by American capital known as N.Y.R.B.A. (New York, Rio de Janeiro, Buenos Aires Line), for which a concession was given by the Argentine Government in 1928.

The Air France took over on May 24, 1934, the contract and concession which was given to the French Company, Cia. General Aeropostal, on February 8, 1927. This line operates an air mail service from Santiago, Chile, to Buenos Aires and from Buenos Aires to Natal in Brazil; from Natal, Brazil, to Dakar in Africa, the mail is carried by fast boats and then is taken by air again from Dakar to Paris. The same route is followed on the return from Paris to Buenos Aires. However, on May 28, the first airplane, "Arc-en-Ciel", piloted by Mermoz landed at Natal from Africa, carrying mail and it is reported that in the future air mail will be carried by the Air France across the Atlantic by airplane instead of by fast boats, provided the flights prove successful.

From M.A.Argentina Report No.4896 June 11,1934.

## ARGENTINA (Economic)

Subject: Industrial Aviation - Development  
and Use:

(c) Activities of Foreign Interests in the Establishment  
and Operation of Industrial Aviation.

The Sindicato Condor is a subsidiary of a German air mail line, the Luft-Hansa. This company carries mail from Buenos Aires to Rio de Janeiro, and from there to a boat stationed in the mid-Atlantic, the "Westfalen", on which landings are made and from there the voyage is resumed by air to Africa and Europe. It is also reported in the press and the Argentine Government has been officially advised that the dirigible "Graf Zeppelin" will leave on June 23 from Friedrichshafen and will make its first trip to Buenos Aires. No mooring mast has been established in Buenos Aires and consequently its stay will be very brief. In view of the Zeppelin's visit to Buenos Aires, the mail which is usually brought on the German line, the Sindicato Condor, will be carried by the Zeppelin, and it is reported that in the future whenever the Zeppelin carries mail, it will take the place of the airplane operations of the Sindicato Condor. It is also reported that the "Westfalen" will be taken to Germany for overhauling during the trip of the dirigible Zeppelin.

The Aeropostal Argentina operates between Bahia Blanca, Argentina and Rio Gallegos, Argentina, once a week, and between Bahia and Comodoro Rivadavia twice a week. Their schedule is shown on attached time-table.

The Pan American Airways and the Pan American Grace Airways both carry passengers and mail and express. The Aeropostal Argentina likewise carries both passengers and mail and express. The Sindicato Condor carries passengers and mail. The Air France carries only mail and express, although occasionally passengers are taken on as an exception.

The Pan American Airways maintain a passenger and mail service between Montevideo and Buenos Aires. See Schedule attached.

The two American lines, the Pan American Airways and the Pan American Grace Airways, are not subsidized but have an air mail contract with the United States Government. The French line, the Air France, and the German Line are subsidized by their respective governments. The Aeropostal Argentina, which is a subsidiary of the Cia. General Aeropostal (now taken over by Air France) receives a monthly subsidy of \$15,000 Argentine paper pesos (present value of Argentine paper pesos about twenty-four cents USCy.) from the Argentine Government, one half of which is contributed by the Post Office Department and the other half by the Aeronautical Department of the Government. In addition, this line receives 30 paper pesos per kilo

## ARGENTINA (Economic)

Subject: Industrial Aviation - Development  
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(c) Activities of Foreign Interests in the Establishment  
and Operation of Industrial Aviation.

for letters and post cards and ten paper pesos per kilo  
for printed matter, samples, etc.

Aside from the subsidy mentioned above, the Argentine Government gives no special aid to air mail companies beyond the exemption from import duties of material used in construction and operation of their air lines.

The apparent attitude of the national Argentine Government toward the continued operation of these air mail lines is very friendly and encouraging. The American companies did have some trouble in securing exchange permits to buy dollars which they had to remit to the United States, but that difficulty was finally satisfactorily solved.

Foreign air transport lines as well as local aviation operations operate under a decree of September 4, 1925, entitled "Reglamentación de la Aeronavegación sobre el Territorio Argentino", or "Regulations for Aerial Navigation over Argentine Territory." This regulation was modified on August 13, 1926 and on March 29, 1933.

The establishment and operation of air transport lines is not regarded as a monopoly; in fact, it is distinctly stated in the concessions granted to the various lines that the Argentine Government will not give any monopoly for air transport.

The local national government is not inclined to give preference to companies of any particular nationality as they are all treated on an equal basis.

The requirements imposed on each of the foreign air transport lines now operating are the usual forms of contract and have no special requirements. A copy of the various contracts is on file in the Bureau of Foreign and Domestic Commerce in Washington.

-----

No foreign companies are known to be endeavoring to obtain concessions to operate air transport lines in Argentina. There have been discussions at various times over the past few years looking toward the establishment of an Italian airline and the Italian Government maintains an Air Attaché in their Embassy here, but so far no actual negotiations for the establishment of such a line have taken place. There has been talk also at various times of the establishment of a British line, but nothing tangible has developed.



## ARGENTINA (Economic)

Subject: Industrial Aviation - Development  
and Use.

(c) Activities of Foreign Interests in the Establishment  
and Operation of Industrial Aviation.

No national air mail line has been established but what is sometimes called a national line is operated by the Government between the city of Córdoba and Buenos Aires. The national airplane factory operated by the Aviation Department of the Army is located at Córdoba and once a week, on Fridays, a round trip is made between Córdoba and Buenos Aires in a four-passenger plane. This is a Lorraine type of plane which was built in the factory at Córdoba. No mail is carried and so far it is reported that seventy-three flights have been effected carrying a total of 256 passengers and 2,052 kilograms of baggage. The line is being operated on an experimental basis and principally for the purpose of training Argentine pilots.

This line is not a serious competitor of the other aviation lines established in Argentina and while there is evidently a desire to train pilots and eventually establish national lines, it will be a long time before such can be done.

According to newspaper reports, the Argentine "Dirección General de Aeronautica" has approached the Paraguayan Government for the establishment of a line between Asunción and Buenos Aires, but no definite information is available on this point, and it is not believed that any serious attempt will be made to operate this line.

As far as known no American companies are endeavoring to obtain concessions and the only American companies operating are those shown above. These companies are facing very determined competition of both the French and the German lines. If the French experimental flights are successful in carrying mail between Brazil and Africa, it will shorten the time of mail delivery to Europe to about four and a half days, which will give Europe a decided advantage over the United States in the way of air mail communications. If we are to maintain our position in regard to trade with South America, it will be necessary to maintain at least as rapid communication between the United States and South America as between Europe and South America.

The Argentine Government has endeavored to promote national aviation and has at present a contract with a leading American manufacturer of airplane engines (The Curtiss-Wright Company) to supply the engines for airplanes to be constructed in the factory owned by the Government and operated by the Army at Córdoba.

From M.A.Argentina Report No.4896 June 11,1934.

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ARGENTINA (Economic)

Subject: Industrial Aviation - Development  
and Use:

(c) Activities of Foreign Interests in the Establishment  
and Operation of Industrial Aviation.

Civil aviation is not very well developed in Argentina in spite of the fact that the greater part of the country is level and nearly all of the surface is a natural landing field.

So far as known, however, no company has endeavored to develop a commercial air route within Argentina. The foreign companies which are operating internationally have a tendency to extend their operations within the country by including more local stops for taking on and discharging passengers and mail.

encl:  
1 schedule.

From M.A.Argentina Report No.4896 June 11,1934.

G-2 Report

ARGENTINA (Economic)

Subject: Industrial Aviation - Development  
and Use:

(c) Activities of Foreign Interests in the Establishment  
and Operation of Industrial Aviation.

SCHEDULE OF  
ARGENTINE AIRMAIL SERVICE  
AS OF MAY 28, 1934.

To: PARIS (Cia. General Aeropostal)

|         |                    |                        |
|---------|--------------------|------------------------|
| Leaves  | Buenos Aires       | June 2 at 5 p.m.       |
| "       | Rio de Janeiro     | June 3 at 11 a.m.      |
| "       | Natal              | June 4 at 8 a.m.       |
|         | From Natal by ship |                        |
|         | to                 |                        |
| "       | Dakar              | June 8                 |
| "       | Toulouse           | June 10 in the morning |
| Arrives | Paris              | June 10 at night.      |
| Leaves  | Paris              | June 26 at 4 p.m.      |
| "       | Toulouse           | June 27 at 8 a.m.      |
| "       | Dakar              | June 28 at 8 a.m.      |
|         | From Dakar by ship |                        |
|         | to Natal           | July 2 in the morning. |
| "       | Rio de Janeiro     | July 2 at night        |
| Arrives | Buenos Aires       | July 3                 |

To: EUROPE (Via Condor)

|         |                |                 |
|---------|----------------|-----------------|
| Leaves  | Buenos Aires   | May 29, June 12 |
| Arrives | Rio de Janeiro | May 30, June 13 |
| Arrives | Sevilla        | June 4, June 18 |
| "       | Stuttgart      | June 5, June 19 |
| Leaves  | Stuttgart      | May 26, June 9  |
| "       | Sevilla        | May 27, June 10 |
| "       | Rio de Janeiro | June 1, June 15 |
| Arrives | Buenos Aires   | June 2, June 16 |

Airplane leaves Buenos Aires every other Tuesday  
at 4 p.m.

Letters can be mailed at the Central Post Office  
until 1 p.m. for registered letters and 2 p.m. for  
regular mail.

When using this line, envelopes must be marked  
"Via Condor."

To: RIO GALLEGOS (Aeropostal Argentina)

Leaves: Tuesdays and Fridays at 7:30 a.m. from  
Bahia Blanca (Crunbein Station) stopping at San Antonio  
Oeste, Trelew, Comodoro Rivadavia, Deseado, San Julian  
and Santa Cruz. Arrives at Rio Gallegos Saturdays.

From M.A. Argentina Report No. 4896 June 11, 1934.

## ARGENTINA (Economic)

Subject: Industrial Aviation - Development  
and Use:

(c) Activities of Foreign Interests in the Establishment  
and Operation of Industrial Aviation.

SCHEDULE OF  
ARGENTINE AIRMAIL SERVICE  
AS OF MAY 28, 1934.

To: RIO GALLEGOS (Aeropostal Argentina) cont'd.

Tuesdays' airplanes go only to Comodoro Rivadavia.

Returns: Wednesdays at 8:30 a.m. from Rio  
Gallegos; Thursdays and Sundays at 7:30 a.m. from Como-  
doro Rivadavia arriving at Bahia Blanca on the same day  
at 12 a.m.

Letters can be mailed in the Central Post Office  
Mondays and Thursdays until 5:30 p.m. for regular mail  
and 5 p.m. for registered mail.

To: MONTEVIDEO

Leaves Moron Airport

Tuesdays, Thursdays and  
Saturdays at 4:30 p.m.

Letters can be mailed in Central Post Office  
until 1 p.m. for regular mail and 12 noon for registered  
letters.

Leaves Puerto Nuevo

Thursdays at 8 a.m.

Letters can be mailed in Central Post Office  
Wednesdays until 6 p.m. for registered mail and until  
9 p.m. for regular mail.

To: SANTIAGO, CHILE (Cia.General Aeropostal).

Leaves Buenos Aires  
" Mendoza  
Arrives Santiago

Sundays at 4 a.m.  
Sunday at 10 a.m.  
Sunday at 12 a.m.

Leaves Santiago  
" Mendoza  
Arrives Buenos Aires

Fridays at 2 p.m.  
Friday at 4 p.m.  
Friday at 10 p.m.

Letters can be mailed in the Central Post Office  
Saturdays until 6 p.m. for registered letters and 9 p.m.  
for regular mail.

Via Panagra (Additional Service) leaves Mondays  
at 9:15 a.m. Mail closes Sundays at 8 p.m. for regis-  
tered letters and at 10 p.m. for regular mail.

From M.A.Argentina

Report No.4896

June 11,1934.

## ARGENTINA (Economic)

Subject: Industrial Aviation - Development  
and Use:

(c) Activities of Foreign Interests in the Establishment  
and Operation of Industrial Aviation.

SCHEDULE OF ARGENTINE AIRMAIL SERVICE (Cont'd)

To: UNITED STATES (Pan American Grace Airways, Inc.)

|         |                |                                  |
|---------|----------------|----------------------------------|
| Leaves  | Montevideo     | Wednesday & Saturday, 7 a.m.     |
| "       | Buenos Aires   | Wednesday & Saturday, 8:15 a.m.  |
| "       | Villa Mercedes | Wednesday & Saturday, 11:30 a.m. |
| "       | Mendoza        | Wednesday & Saturday, 2:15 a.m.  |
| "       | Santiago       | Thursday & Sunday, 8:00 a.m.     |
| "       | Antofagasta    | Friday & Monday, 6:30 a.m.       |
| "       | Salinas        | Sunday & Wednesday, 6:00 a.m.    |
| "       | Buenaventura   | Sunday & Wednesday 11:50 a.m.    |
| "       | Cristobal      | Monday & Thursday 7:00 a.m.      |
| "       | Kingston       | Tuesday & Friday 8:00 a.m.       |
| Arrives | Miami          | Tuesday & Friday 5:15 p.m.       |
| Leaves  | Miami          | Wednesday & Sunday 8:00 a.m.     |
| "       | Kingston       | Thursday & Monday 6:30 a.m.      |
| "       | Cristobal      | Friday & Tuesday 6:50 a.m.       |
| "       | Buenaventura   | Friday & Tuesday 10:55 a.m.      |
| "       | Salinas        | Saturday & Wednesday 6:00 a.m.   |
| "       | Guayaquil      | Saturday & Wednesday 7:15 a.m.   |
| "       | Lima           | Sunday & Thursday 6:30 a.m.      |
| "       | Antofagasta    | Monday & Wednesday 7:30 a.m.     |
| "       | Santiago       | Tuesday & Saturday 7:30 a.m.     |
| "       | Mendoza        | Tuesday & Saturday 9:30 a.m.     |
| "       | Villa Mercedes | " " 11:40 a.m.                   |
| Arrives | Buenos Aires   | " " 3:00 p.m.                    |
| "       | Montevideo     | " " 5:15 p.m.                    |

Between Miami and New York there is a direct air mail service.

In Cristóbal it joins a line to Venezuela, Costa Rica, Nicaragua, Honduras, Guatemala, El Salvador and Mexico.

Mail is closed at the Central Post Office Tuesdays and Fridays at 10 p.m. for regular mail and at 8 p.m. for registered mail.

TO: UNITED STATES (Via Brazil - PANAIR)

Leaves Puerto Nuevo Thursdays at 8 a.m. with the following stops: Montevideo, Rio Grande, Porto Alegre, Florianopolis, Paranagua, Santos, Rio de Janeiro, Victoria, Bahia, Maceio, Pernambuco, Natal, Fortaleza, San Luis, Pará, Paramaribo, Georgetown, Puerto España, Port Castales, St. Johns, St. Thomas, San Juan, Santo Domingo, Port au Prince, Antilla Nuevitas and Miami.

Mail is closed at the Central Post Office Wednesdays at 8 p.m. for registered mail and at 10 p.m. for regular mail.

*Fredrick D. Sharp*  
From M.A. Argentina

Report No. 4896

June 11, 1934.

*Capt G. S. M. A.*

G-2 Report

ARGENTINA (Combat)

Subject: Military Supply

(b) Government Production of Military Supplies.

On the 11th of December this year, the writer traveled to the City of Cordoba for the purpose of visiting the aeroplane factory of the Government situated at this place. The City of Cordoba is about 400 miles from the City of Buenos Aires, and is reached by the Central Argentine Railway in 12 hours by the fastest train, or, if one travels by aeroplane, it is about 4 hours. It is situated in the foothills of the Sierras de Ishlin, a Cordoba range of mountains, and is one of the most fertile and beautiful farm countries of the Argentine, closely resembling the Middle West of the United States. The City of Cordoba is the center of the ring of summer resorts, the principal ones being - La Cumbre, in the mountains, and Alta Gracia in the foothills. There are plenty of good roads through all the surrounding country, but they do not extend beyond the immediate vicinity. The main highway between Buenos Aires and Cordoba is always in horrible condition, and a great part of the year, between Rosario and Cordoba, it is impassable.

The aeroplane factory itself is located about 5 miles from the center of the City of Cordoba on the main highway which leads from Cordoba to Carlos La Paz. It is midway between the main highway to Alta Gracia and the main highway to La Cumbre. A spur track of the Central Cordoba Railway runs from Cordoba to the factory.

The area covered by the factory is about 160 acres which includes all buildings, landing fields and homes for the administration officials. There are twenty-three separate buildings to the factory, assembled near the road to Carlos La Paz. They are divided into two main groups. The first group, as you enter the gate, consists of the Administration Building, containing laboratories and library. To the rear and beyond the Administration Building are the testing laboratories and workshops, and, in the rear of this group, a building containing a wind tunnel. In extension of the rear line of buildings, they are constructing officers quarters for the commissioned and civilian personnel in charge of the factory. There are only three or four officers and a very small detail of soldiers stationed at the factory for guard duty, all the rest of the personnel, including the engineers in charge of laboratories, workshops and all construction, being civilians. The entire factory itself is under the direction or administration of a captain of the Air Corps.

The main factory is arranged in two lines of buildings. The first two are reserve storehouses, and after that they are arranged so that one line of buildings acts as a flow for metal parts, while the other acts as a flow for wooden parts and the two lines finally meet at the assembly plant or hangar, which is a large building.

From M.A. Argentina

Report No. 4489

January 16, 1932

## ARGENTINA (Combat)

## Subject: Military Supply

(b) Government Production of Military Supplies.

approximately 60 metres by 60 metres. They are at present installing in the building where most of the lathe work is done, and in the assembly plant, a new ventilation system for the comfort of the workers. There are a few other buildings used as warehouses, shops, etc. The factory is modern in every detail, and in its construction no expense was spared in the purchase of equipment and instruments. It is believed that the factory cost, according to the best authorities, about six and one-half million dollars in U.S. currency. The Administration Offices resemble a well-furnished bank, the partitions between the various departments being made of plate glass, with all mahogany finished furniture, and brass grill openings separating the workers from the public. There is an appearance of modern severity which gives it the effect of modern efficiency. The equipment in the laboratory, the library and the radio control room is likewise of the most modern type and has been purchased from every country where the Argentines thought they could get the best in each line. It was especially noted that a great deal of the special equipment was purchased in the United States, and that in their library all the known magazines of science and aeronautical engineering sold in our own country, were available here. Interpreters are kept on hand to explain any articles desired. They even maintain a subscription for all the latest special articles on aviation progress in Russia.

In the testing laboratories, machines have been installed for making tests of breaking strength, torsion and crushing strength, longitudinal strain and direction of fracture. They cover all materials including wood, metal, fabrics, wire, cable and rope. The wind tunnel is 40 feet long, and is made in the shape of a wooden cylinder through which air is forced by a compressor, and model aeroplanes can be placed within the tube and tested for flight qualities.

The perfection of machinery is carried out in the working plant, and it was noted that most of the wood-working machines were purchased from the United States and some from Germany, while most of the metal-working machines are of French and United States manufacture with a few German.

The plant is designed along the idea of a continuous flow of operation the same as that employed in the big automobile factories of the United States. It has been designed to allow for an extension in time of an emergency. Since the time of its foundation, it has never been run at full time strength, so that it is very difficult to tell just what it can do. It at one time employed about six hundred men and with that number, it would be capable of turning out about one aeroplane a day. At the

## ARGENTINA (Combat)

## Subject: Military Supply

(b) Government Production of Military Supplies.

present time, I should say that there are not more than two hundred men at work in the entire plant, if that many. Among this number we noted so many boys as young as thirteen and fourteen years of age doing work upon lathes and other big machines, that it aroused our curiosity, and upon inquiry were advised that these young men were aspiring to be mechanical engineers, and were taking a certain amount of vocational training by getting their practical work at the plant. By developing the idea of vocational training in connection with the manufacture and sale of civilian planes, we believe they have made a tremendous stride. This is apparently their idea and that of General Agustin Justo, the President-elect, who was responsible for the founding and erection of the factory during the time that he was the Minister of War under President Marcelo Alvear, and, as this is one of his pets, it is believed that the work will receive great impetus. It is possible in time of emergency to employ as many as three thousand men at one time, and they claim that with this many in operation, they could complete about fifteen planes a day.

At the time of my visit, only repair work was being done and in some cases the outfitting of new motors on which is expended the maximum number of hours. As the Flying Fields are only equipped to do very minor repair work, all planes when possible are sent to the factory at Cordoba for overhauling and repairing. The Officer in charge of the factory informed me that they were using up the last of the Lorraine Dietrich motors they had on hand and when those on hand were used up, they intended giving them up and would use the Wright motors of both the Whirlwind and Cyclone type, for which they have just received the patent right to build under a contract of which we advised you in our Report No.4398. We noticed that they already have a large number of both types of the Wright motor on hand. Incidentally, the contract price for this license was 50,000 dollars U.S.gold, and I have just been advised by Mr.Lawrence Leon, representative of the Curtiss Wright Export Corporation here, that the difficulties of collection are many; that he has managed so far to collect 30,000 dollars on the contract price. The Curtiss Wright people have already delivered a number of motors of the Wright Whirlwind and Wright other types. They are very enthusiastic about the Wright air-cooled motors. ✓

The factory has recently completed the construction of a 2-seated, low winged monoplane for sale for civil and commercial purposes. Every feature of this plane was studied and worked out in the factory, and we must say that they made a rather handsome job. The plane has demonstrated its flying ability and also its strength inasmuch as one of the test pilots in making a bad landing managed to crack up with very little damage to the plane and none to himself.



## ARGENTINA (Combat)

## Subject: Military Supply

(b) Government Production of Military Supplies.

I saw the frame of the damaged plane in the shop, and it had suffered practically nothing at all from the shock. The plane when equipped with a Lorraine-Dietrich motor has a cruising speed of about 100 miles an hour and a maximum speed of 120 miles an hour, and with a Wright motor it has a cruising speed of 115 miles an hour and a maximum speed of about 130 miles an hour. Being a low-winged monoplane, it has a very sporty design, but has the bad features of that type of plane. That is, it would require an experienced pilot to fly it as compared with the bi-plane of the simple training or sport model type. Its visibility is very poor, requiring considerable manoeuvring to be sure of a clear landing. Its worse feature is the top which closes it into a cabin plane, and, incidentally, this cannot be removed in order that it may be flown as an open job. The top slides from front to rear over both the front and rear cockpits and must be kept in a closed position while in flight. It is made of fabric with rod stays and windows of isinglass. This considerably increases the poor visibility and adds to the danger of the pilot and passenger if the ship should nose over, as there are no reinforcements or supports to protect the head in that event. A model of the plane is now being flown all over the country and attracting wide attention.

In the future planes, the motor and a great deal of the other equipment will be of American manufacture. However, for the initial job, it is an excellent one, and we believe quite a marketable commodity. There is no reason why they should not improve on this and other types of commercial planes, and if they do, they should make their factory pay for itself in time of peace, at the same time gaining instruction and experience for their engineers. We believe that it is the only actual construction plant for aeroplanes and aeroplane motors in South America.

The Fokker Company has just had a contract approved by Lt. Colonel Angel Zuloaga, Chief of the Argentine Army Air Corps, for the manufacture of their aeroplanes in the factory at Cordoba. This contract calls for the manufacture of all types of Fokker aeroplanes. The contract did not specify purchase price for the patent, which was probably reserved for confirmation of the contract. The representative here of the Curtiss Wright people does not believe that the contract will go through, but on the contrary believes that he is about to put through a contract for the manufacture of the Curtiss Wright aeroplane. Both the Fokker and the Curtiss aeroplane will call for the use of Wright motors. It is understood that Colonel Zuloaga only signed his approval of the contract because he was being pushed by a higher political source favorable to Germany. However, I have been reliably informed by

ARGENTINA (Combat)

Subject: Military Supply

(b) Government Production of Military Supplies.

others interested that they do not believe this contract will be successful in passing through the Office of the Minister of War.

A further criticism of the new civilian plane was brought to my attention last night after the completion of this report, and that is, that it lands much too fast for an amateur pilot to bring it into any field not of a considerable size. I was also informed by my contact that it is the plan of General Justo, when he becomes the President, to extend this factory to its original plan, which is about double its present size, and to manufacture camions and trucks for the Army and also for the civilian public that would be suitable to the roads of Argentina; that is, that they would have much larger wheels and more clearance.

Enclosed are two newspaper photographs of the new plane. One shows the hood in its closed position, and the sepia copy shows the hood with the top slid back.



From H.A. Argentina Report No. 4489

January 16, 1932

NO OBJECTION TO PUBLICATION  
IN SERVICE JOURNALS.

6-1  
2076-115  
DEC 20 1937  
2  
9500-4  
ATTNMENT

G-2 Report.

ARGENTINA - Aviation, Military.

Subject: Government Production;  
Inadequacy of Córdoba Factory.

RECEIVED G-2 W. O. DEC 16 1937

After ten years of operation of the Fábrica Militar de Aviones de Córdoba criticism of its results in production of airplanes for the necessities of the army is made editorially by La Prensa under date of November 19, 1937.

The factory was founded in 1927 when the present Chief executive, General Justo, was Minister of War; it started with a working staff of 100 persons a number of whom had previously been sent to various European factories for work and study preparatory to the opening of the Argentine army factory.

La Prensa calls to mind the words of the messages to Congress by the Chief Executive in asking for appropriations for the establishment of the factory that "it was destined to provide the necessary material for both civil and military aviation to make us independent in this respect of foreign markets".

"It is evident and sensible, without doubt", the newspaper continues, "that these hopes have not been possible of realization. However, the most enthusiastic and optimistic cannot deny that ten years is sufficient to judge the results and future of any industrial establishment, whether it is going bankrupt or will be able to find a market for its product."

The Prensa holds that the establishment of the factory was premature in view of the then state of aviation knowledge; that its first conception of scope was erroneous - it cites the closing of a plant along similar lines in Australia at that time - and indicates that private initiative, such as later developed in Australia, would have been more likely to succeed; also that the need for purchasing patents in foreign countries - because Argentina has not developed aviation experts in design or engine construction - keeps aviation constantly behind the times as such patents are not for sale until a better has been proved in the industry of the selling country. This, it points out, is especially detrimental for aviation in the armed forces of the country.

It concludes: "It is these reflections which suggest to us that ten years of existence already completed by Fábrica Militar de Aviones de Córdoba is long enough to make evident these circumstances".

COMMENT:

This is the most outspoken statement published so far suggesting that the Government should desist from attempting to build its own airplanes because of its dependence on foreign sources of supply.

Source: As stated.

*Lester Baker*  
Lester Baker, Col. Inf.  
Military Attaché.

Original & 5 copies mailed Nov. 20th.

From M/A Argentina.

Report No. 5671. November 19, 1937.

MAIL

NO OBJECTION TO PUBLICATION  
BY ARMY AIR FORCE

5-1

2076-115

1938  
133

RECEIVED  
MILITARY DIV.

3  
WAR DEPARTMENT  
9,000.

G-2 Report.

ARGENTINA -- Aviation - Military.

Subject: Military Aviation - General;  
German company offers to operate  
Córdoba army factory.

Well-authenticated reports in Buenos Aires are to the effect that the Ministry of War is considering an offer by the German Focke Wulf company to take over and operate the Argentine Army airplane factory at Córdoba, there to build planes for Argentina and for other South American countries. No details of the proposed financial arrangements being considered have been made public.

The Córdoba factory has been in operation since 1927, and has cost the government something more than forty million pesos during that period. Originally the factory went in for construction along its own lines, purchasing motors in Europe and in the United States. Later it secured the rights to build planes of several makes, and recently has been concentrating on Focke Wulf machines.

These Focke Wulf machines have been built for the army, and recently for the Civil Administration of Aeronautics. Twelve of them were delivered to the civil aeronautic authorities about two months ago at cost price for distribution among civilian aeronautical clubs in various parts of the country with the purpose of increasing interest in aviation and also training civilian pilots.

The German offer to operate the factory is being studied by Argentine army authorities, assisted by a group of technical experts on aeroplane construction, and due consideration is being given to the economic benefits to be derived from the sale of machines made at the Córdoba factory to other countries of South America. The presence of Focke Wulf technicians, and the instruction which they can give to Argentine technical workers is considered to be of decided benefit to the country.

Within a few days there will arrive in Buenos Aires from Germany three Focke Wulf machines destined for training purposes in the Argentine army. They are three-motored monoplanes with Argus engines developing 240 h.p. each. They have a wing span of 21 meters and length of 14 meters. They can mount a machine-gun forward and one aft, also can be equipped for bombing. Speed in 200 to 250 kilometers. They can reach 5,600 meters altitude and can fly with only one engine working. Landing speed in 76 kilometers. These machines are equipped with instruments for blind flying and navigation.

Source: Press.

*Lester Baker*

Lester Baker, Col. Inf.,  
Military Attaché.

Original & 4 copies airmailed Aug. 30th.  
Confirmation copy by steamer Sept. 3rd.

G-2 Report.

386 1939  
OFFICE CHIEF OF STAFF  
MIL. INTEL. DIV.

5-1 2076-1154

OCT 20 1939  
4-11-39

9,500-b.

ARGENTINA - Aviation - Military.

Subject: Government Production;  
Focke-Wulf Construction Discontinued.

RECEIVED G/2 W. D. OCT 20 1939

(Ref. Comments and Suggestions Apr. 8, 1939)

In reference to "Comments and Suggestions on Reports from M/A Argentina" of April 8, 1939, asking if the Argentine Government airplane factory at Córdoba would continue to make Focke-Wulf planes now that it is producing Curtiss Hawk 75's, it is definitely known, at the present time, that the manufacture of Focke-Wulf planes has been discontinued.

This is on account of the inability to import from Germany the necessary tubing and partially-made metal parts, since the outbreak of the present European war.

Source: Personal contacts.

*Lester Baker*  
Lester Baker, Col. Inf.,  
Military Attaché.

Original & four copies airmailed Oct. 10th.  
confirmation by steamer.

Classification

Enclosures  
2076-115-  
5-  
Record Section File No.  
Copy No. 6-1  
For Record Section Only

# MILITARY INTELLIGENCE DIVISION

## WAR DEPARTMENT GENERAL STAFF

### MILITARY ATTACHE REPORT

Country Reported On  
Subject Air - Military. Domestic Production. I.G. No. 9,505.

#### Source and Degree of Reliability:

Personal contacts. Absolutely reliable.

#### Summarization of Report

When Required Army airplane factory at Córdoba turns out first Curtiss-Wright pursuit plane.

In Comments on Current Events Enter Item Headings Here

The Córdoba airplane factory of the Argentine Army on August 16th tested in flight and maneuvering its first Curtiss-Wright Hawk-75 single seater pursuit plane with full success. This plane is the first of a series of 20 built under license obtained from the Company by contract of May 1938. The plane is engined with a Wright Cyclone G-5 1,000 h.p. motor. Work was started in October 1939 under the direction of an engineer sent from the American factory. The other 19 planes of the series are 25% completed at present and the second will be ready for trials in three or four months; after this time the others will be completed at the rate of one a week. Work was delayed at the start by lack of skilled mechanics as none knew about spot welding or flush rivetting. The first month the American engineer had four mechanics, the second month 15 and now there are only 150 available.

A new contract is now under discussion between the American company and the Argentine army for 50 sets of material to build Hawk-75-a's powered with Wright Cyclone G-205-a engines of 1,200 h.p., the same plane as was recently delivered to the French Army. It is possible, if the defense bill now before Congress passes, that this 50 sets of material will be increased to 80 or 100 sets.

This army factory has built previously about 180 Focke-Wulff Primary Trainers with Siemens 150 h.p. engines, of which 40 to 50 have been turned over to the Civil Aeronautics Authority. These planes were built under a contract made late in 1937, but during the past few months there has been no delivery of the Siemens engines; when they are available again this type of plane construction will be continued.

*M. A. Devine, Jr.*  
M. A. Devine, Jr.,  
Major, G. S.,  
Military Attaché.

All copies airmailed Aug. 23rd.

G-2 Distribution: 4, 5, 6,  
Copy No. 1, R/S; 2, L/C; 3, Section File

From M. A. Argentina. Report No. 6313 Date August 21, 1940.  
This line to appear on all succeeding pages

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| Classification |
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| Enclosures<br>2076-115<br>6 |
| Record Section File No.     |
| Copy No. 6-1                |

**MILITARY INTELLIGENCE DIVISION**  
**WAR DEPARTMENT GENERAL STAFF**  
**MILITARY ATTACHE REPORT**

RESTRICTED

Subject Air, Military - Domestic Production Country Reported On I. G. No. 9505

|   |
|---|
| Source and Degree of Reliability:<br>Personal contacts - wholly reliable. |
|---|

|  |
|--|
| Summarization of Report<br>When Reported<br>Ref. G-2/2724-L-23, July 15, 1940. |
|--|

There is only one airplane-manufacturing plant in Argentina and this is the Government-owned one operated by the Army near the city of Cordoba in the province of the same name.

It was established 13 years ago when General Justo was Minister of War. During this period when he was War Minister and later when he was President from 1932 to 1936 this factory was the pet of all government projects although it never constructed a successful plane of its own design.

From about 1932 to 1936 it built what was termed a "Prototype" plane. These were single-engined bombers and light observation machines of Argentine design but they were never successful in operation. They were engined with Wright motors, the bombers with 750-h.p. Cyclones and the light observations with 420-h.p. Whirlwinds. The Army bought 14 Cyclones of which 12 were mounted in planes, and 45 Whirlwinds of which, it is believed, all were mounted.

The fact that neither of these types of planes designed by Argentine engineers proved satisfactory called down much criticism in the press against the continuance of operation of the factory, even after it began to build planes of European and American design under licenses from the parent companies.

With the failure of their own designers, the Army factory turned to France, and was licensed to build DeWoitines with Lorraine-Dietrich engines, all materials coming from French factories and being assembled at Cordoba.

These planes, number unknown, did not meet the needs of the Army. Then license was obtained to build Junkers, but none were ever constructed. The factory also secured license to build Morane engines and 45 of these are believed to have been built at Cordoba.

G-2 Distribution: 4, ..... 5, ..... 6, .....  
 Copy No. 1, R/S; 2, L/C; 3, Section File

From M. A. Argentina Report No. 6323 Date September 5, 1940  
 This line to appear on all succeeding pages

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| Classification |
|----------------|

9505

Subject: Air Military - Domestic Production.

The next license obtained was to build Focke-Wulff Primary Trainers with Siemens 150-h.p. engines. Of these 120 were built of which about 70 were retained by the Army and the remainder turned over to the Civil Aeronautics Authority for distribution among civilian flying clubs to train civil pilots.

In May 1938, the Argentine Army obtained a license from Curtiss-Wright Corporation to build 20 Hawk 75's with Wright Cyclone G-5, 1000-h.p. motors. The progress of construction was slow because of the few skilled mechanics available, and the first plane of this type was only successfully tested on August 16, 1940. (See G-2 Rep't. #6313, I.G. 9505, Aug. 21, 1940). The other 19 of these machines are under construction and will be completed about November 1st at the estimated rate of one a week.

At present, the Cordoba factory is negotiating with Curtiss-Wright for from 50 to 100 sets of material to build Curtiss Hawk 75-a's with 1200-h.p. engines; the number to be built will depend upon the amount of money the Congress authorizes under the defense schedule during the next few weeks.

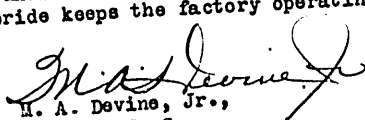
Only Cyclone engines are now being used by the Argentine Air Force in order to cut down the number of spare parts to be carried in stock.

The Cordoba factory makes no armament for airplanes; all planes carry armament of foreign manufacture.

The Naval Arsenal has made some fragmentation bombs, and two or three private plants have made practice-type bombs.

COMMENTS.

The Argentines have come to believe that they are not equipped to build up-to-the-minute planes, and the Cordoba factory is considered a political boomerang in many respects. The reasons for this attitude are the lack of skilled mechanics which renders production slow, and also the fact that when a plane is finished it is already obsolescent as no licenses can be obtained to manufacture from foreign companies until such companies have a faster and better model in production. National pride keeps the factory operating.

  
M. A. Devine, Jr.,  
Major, G. S.,  
Military Attache.

All copies airmailed Sept. 6th.

From M.A. Argentina.

Report No 6223.

September 5, 1940.



CONFIDENTIAL

Classification

Enclosures

Record Section File No.

Copy No. 6-1

For Record Section Only

RECEIVED 8/27/40 OCT 28 1940  
**MILITARY INTELLIGENCE DIVISION**  
**WAR DEPARTMENT GENERAL STAFF**

**MILITARY ATTACHE REPORT Argentina.**

Subject Air - Military - Domestic Production Country Reported On  
I.G. No. 9505.

Source and Degree of Reliability:

Personal contacts; reliable.

Summarization of Report

When Required

Additional information.

In Comments on Current Events Enter Item Headings Here

(Ref. G-2/2724-L-23, July 15, 1940).

As reported in G-2 Report No. 6323, I.G. 9505, Sept. 5, 1940, the first Curtiss-Hawk 75 was tested after completion at the Córdoba factory on August 16, 1940, and at that time this office reported that the other 19 of the 20 licensed to be built would be completed at the rate of one per week.

It now appears that with the completion of this one plane the Argentines have lost some of their enthusiasm and it is stated that the last of the remaining 19 may not be completed until the end of 1941. On October 1st these planes were 37% complete.

It may be of interest to the War Department to know that the power-plant, landing gear, exhaust manifolds and instruments were purchased in complete form and that the remaining raw products were also purchased but the cutting, molding, rivetting, etc. was accomplished at the factory.

This "let-up" indirectly led to the relief of Mr. Haberstro, the Curtiss-Wright construction expert, who is now en route to the United States.

The Córdoba plant employs approximately 850 men, including caretakers, gardeners etc. At the peak of their enthusiasm 150 workers were engaged with the Curtiss-Hawk product but now the number has been reduced to 100 and there is a fair likelihood that this particular crew may be further reduced.

It appears that the Argentines cannot concentrate on one particular thing and carry it through to completion. While carrying on the Curtiss-Hawk project they were at the same time working on three German-type gliders (reported in Comments on Current Events No. 36) one of which has been completed, and they are also building a two-place "sport" plane powered by a 50-h.p. Continental engine. It is reported

G-2 Distribution: 4, 5, 6,  
Copy No. 1, R/S; 2, L/C; 3, Section File

From M. A. Argentina Report No. 6378 Date October 17, 1940.  
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CONFIDENTIAL

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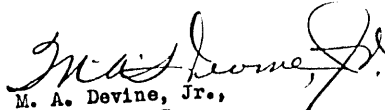
9505.

Air - Military. Domestic Production.

that only one of these latter type will be constructed and that it will be completed shortly.

Various sources report that the factory has fine modern equipment, can do a good repair job, but owing to national characteristics and jealousy and faulty plant layout (necessitating the hand cartage of materials and parts from one building to another) the factory will never become a mass producer of modern military planes.

At present the plant has not an engineer who is capable of designing a modern metal-covered plane. The Chief Engineer is French, the First Assistant is Italian and the Second Assistant a Hungarian. It is stated that these directors are theorists and lack even rudimentary practical experience.

  
M. A. Devine, Jr.,  
Major, G. S.,  
Military Attaché.

All copies airmailed Oct. 18th.

CONFIDENTIAL

Classification

Enclosures

Record Section File No.

Copy No. 6-1

For Record Section Only

## MILITARY INTELLIGENCE DIVISION

### WAR DEPARTMENT GENERAL STAFF

#### MILITARY ATTACHE REPORT Argentina

Country Reported On

Subject Domestic Airplane Production

I.G. No. 9505

Brief Descriptive Title

Source and Degree of Reliability

Personal inspection.

#### Summarization of Report

When Required

Ref. Rep't. #6378, I.G. 9505, Oct. 17, 1940.

In Comments on Current Events Enter Item Headings Here

#### GENERAL DESCRIPTION.

The Argentine Army airplane factory at Córdoba, located approximately 8 kms. (5 miles) southwest of the center of the city of Córdoba, was established in 1927 and consists of a group of grey concrete buildings with red tile roofs, generally of one-storey type.

The plant proper, arranged in a large rectangle on a plain, consists of about 50 shop buildings approximately 75 X 200 feet each separated by a street or walk about 40 feet in width; one administration building, and several miscellaneous structures housing test equipment. Each building is constructed as a unit and no means is provided for the movement of materials or the assembly of completed parts between shops other than hand-pushed cars. The entire floor space was stated to be 135,000 square meters.

The assignment of different types of work to a particular shop building appears to have been dictated with a view to uniformity rather than convenience, practicability, efficiency, and the most advantageous use of the available floor space. As an example: one shop had approximately 120 machines of various types crowded end to end, so that if all or a majority had been in operation it would have been difficult, if not impossible, to move raw materials in and completed work out without a disruption of the working force, while others hardly utilized 20% of the available floor space.

The factory is quite complete and includes at least a type department which might be expected to be found in a functioning airplane factory.

There are three landing fields immediately adjacent to the factory. One is the factory field, a second, for use of the aviation school which adjoins the factory; and a third, a civilian field just across the main highway used by commercial aviation companies like Pan American. In dry

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weather all fields would be suitable for bombardment aviation, but only the school field is equipped for night flying.

Several modern hangars are provided for the storage of planes.

#### FOUNDRY.

The foundry is equipped with two small oil furnaces approximately three feet in diameter, and an adequate cinder-sand floor for casting molds. The furnaces were being used to melt light aluminum scrap which was cast into small bars. Included in the equipment is a glass-enclosed pressure sand-blast machine utilized for cleaning and polishing the finished castings. There is an apparatus recently acquired which it was said could X-Ray materials and uncover structural defects.

#### PROCESSING.

Another shop is devoted entirely to the electrical treatment or processing of castings and surface materials which process is said to render the material rust-proof. Two of the tanks were about fifteen feet long, three feet deep and two feet wide, which would make it possible to treat a large size member or a number of smaller parts or castings. Two smaller tanks for electric plating were included in the equipment.

#### GEARS.

One shop is devoted to the finishing and calibration of various gears. The finished product reflected the work of skilled mechanics. It was stated that parts in the rough were purchased from Germany and the United States, and finished at the plant. The purchase of castings in Germany is explained by the fact that the Argentine Air Service includes both German and American type planes.

#### PROPELLORS.

The department devoted to the repair of metallic propellers seemed to be well equipped and to be turning out work of a high caliber. The Commandant claimed that this is the only shop south of the United States where propellers can be realigned and re-tapered. He assured me that the Army is in possession of a secret "heat" process which enables the plant to take a propeller, without regard to the amount of damage, and restore it to its original condition.

One building is utilized for the repair and manufacture of wooden propellers. The work seemed to be of a high order. It was difficult to distinguish between the propellers purchased abroad and those fabricated at the factory except by an examination of the markings. In preparation for the turning operations, large laminated blocks were built up from strips of mahogany from three to six inches in width and from 1/8" to 1/4" in thickness. Upon inquiry it was learned that the mahogany used for the repair and construction of propellers is obtained from the province of Misiones (on the border of Brazil). The shop is completely equipped with modern turning and polishing tools.

#### ENGINES.

Another building is devoted to the assembly, repair and servicing of motors. Over 100 engines awaiting repairs were piled on tables. It was obvious that this department was far behind in its work, as less than

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190 planes are at present allotted to the Army Air Corps. It was apparent that very little work was being done to clear these engines through the shops; however, the completed engines seemed to have received a painstaking and complete overhaul. All insulated wiring and spare parts for American type planes are imported from the United States.

#### WINGS.

One building is allotted to the repair and assembly of wings for the Curtiss-Hawk planes (19 now being built). There were tiers of wings in various stages of repair and assembly. The shop appeared to be fully equipped, in fact was jammed, with an abundance of wooden forms for wing fabrication. I inspected some of the completed wings and was impressed with the finished quality of workmanship. The entire assembly, including the paint job, is carried through to completion in this shop.

#### FUSELAGES (Metal).

One building is devoted to the assembly of fuselages for the Curtiss-Hawk planes. It seemed to be completely equipped with a multitude of wooden forms and with material and tools for completing this work. At the time of my inspection one fuselage was approximately 3/4 complete, one was 1/2 and two 1/4 completed. It was apparent by the set-up that four fuselages could be worked on at the same time, but only two mechanics appeared to be engaged on this work.

#### MACHINE SHOPS.

The strictly machine shops are located in two separate buildings which seemed to be overly crowded when available floor space is considered. One shop contained approximately 120 machines of various character; lathes, planes, shears, drills, presses, cutters, etc., while an adjacent building was similarly equipped with about half this number.

#### WELDING.

This shop provides facilities for welding of various types and contains all types of necessary machinery. One spot-welding machine was in operation. Upon inquiring, I was informed that this apparatus was capable of spot-welding materials of 3/8" thickness. This department was engaged in the manufacture and repair of gas tanks for both wing and fuselage installations.

#### WOODWORKING.

The woodworking department comprised several buildings and was well equipped with power-driven tools. It appeared that precedence was being given to the construction of two German-type gliders; the woodwork on one appeared to be practically completed, and the other to be about 30% along. (See Rep't. #6377, Comments on Current Events No. 36, Oct. 16, 1940).

This department repairs and builds the wooden framework for the Focke Wulf trainers, and also does the fabric work.

#### INSTRUMENT CALIBRATING.

This division provides facilities for the repair and calibration of instruments. It was furnished with much delicate and complicated machinery with which I am not familiar. The personnel was engaged in the repair

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of clocks, the test of altimeters, and what appeared to be a bank indicator. I was informed that this department is capable of repairing and testing all instruments with which the Argentine Air Corps is equipped.

I was told that the basement contains a frigidaire system used for the test of equipment at a temperature of 20° below zero Centigrade. (The keys to this room were not available).

#### WIND TUNNELS.

The factory is provided with a large and a small wind tunnel for the testing of designs. It was said to be the French type tunnel. The large tunnel which is estimated to be fifty feet in length is said to generate a wind velocity of 60 meters per second (more than 180 feet per second). The miniature tunnel is about ten feet in length.

#### MACHINERY.

The bulk of the machinery is of relatively recent design and is of English, German and American manufacture. I was informed by the Commandant that all recent purchases have been from the United States and that none has been purchased from Germany in the past fifteen years. From this it appears that the initial installations were purchased in Germany some years before the factory was completed, and that thereafter machinery was purchased in England and the United States.

All heavy machinery is power-driven, and, with few exceptions, appeared to be in working condition and well oiled.

#### POWER PLANT.

Power is furnished by the local electric company but the plant is provided with two 1500-h.p. generators which are capable of producing sufficient current for plant operation.

#### PLANES AWAITING REPAIRS.

There were a number of various type planes stored in hangars awaiting repairs of major or minor importance. I noted on the tag of a Curtiss-Hawk that the machine had been stored for over a year awaiting the necessary repair work. This particular plane appeared to require only a small amount of metal work on the tail assembly and fuselage.

#### PERSONNEL.

Major F. O. Sanguinetti is the director of the factory and as such functions directly under the Ministry of War, as the station is exempted from the control of the Fourth Military District.

The production appears to be actually under the supervision of three foreign experts who are civilians.

It was stated that 910 civilians are employed in various capacities but of the total I would estimate that less than half this number were engaged on actual airplane work.

The War Ministry experiences difficulty in obtaining trained mechanics and has adopted a policy of hiring boys from 15 to 18 years of age and training them under the supervision of experienced mechanics.

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The Commandant stated that this system had proved most satisfactory; the boys learn quickly and are easily disciplined to shop routine.

PLANS FOR THE FUTURE.

These include the completion of the remaining 19 Curtiss-Hawk planes at the rate of one per week. To date only one has been completed.

The building of an additional 120 Curtiss-Hawk planes with retractable landing gear within the next three years.

The fabrication of an undetermined number of sport planes at a cost of \$6,200 pesos for Argentine citizens and \$8,600 pesos for other nationals. (\$1,500 to \$2,100 U.S. Currency).

A building program, the plans for which have not received approval.

COMMENT.

The factory is in reality not a factory but an assembly plant as parts are purchased in the rough and finished at the plant. Intricate instruments and components are bought completely finished and merely installed.

The physical layout will prevent efficient mass production unless radical alterations and additions are made. The shops appear to be fully equipped to build and repair planes; only direction and effort seem missing.

Policy seems to have dictated that Argentina possess an airplane factory regardless of whether it functions efficiently or not.

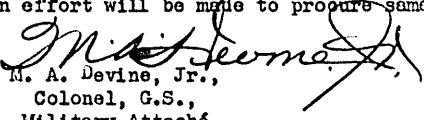
Effort is diversified rather than concentrated, and a project once initiated appears to be abandoned or suspended upon the slightest excuse. Parts for eight or ten planes are completed, and the motors for the Curtiss-Hawk 75's were purchased as a finished product so the planes only await assembly, but meanwhile the engines have been permitted to rust.

This factory paints a word picture of Argentina. One of the problems which will confront our government if we ever engage in joint military operations will not be that of initial mobilization and concentration but the keeping of units in the field equipped and supplied. They lack a sense of responsibility and an interest in maintenance. Anything that is not of immediate interest or an innovation is apt to be neglected.

✓ No provision for fire protection was noted.

It was stated at the time of the inspection that the majority of employees were on vacation.

It is realized that this is not a technical report as my previous experience has been limited to contacts with a U. S. Army air base. If further information is desired an effort will be made to procure same.

  
M. A. Devine, Jr.,  
Colonel, G.S.,  
Military Attaché.

All copies airmailed Feb. 12th.

AIR MAIL

NO OBJECTION TO PUBLICATION  
IN SERVICE JOURNALS.

G-2 Report.

OFFICE CHIEF & SEC  
MIL., INTL. DIV.

5-1  
MAY 28 1938  
2076-132  
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WAR DEPARTMENT

9,550-e.

ARGENTINA - Aviation - Military.

Subject: Method used by the Argentine Army  
Air Service for testing the Performance  
of Aircraft in Competitions to determine  
Selections for Purchase.

RECEIVED G/2 W. D. MAY 26 1938

The following methods by which the Argentine Army Air Service determines performance of aircraft is based on the methods followed during the competition held in Buenos Aires in 1936, and in determining the performance of the Curtiss Hawk 75 in late 1937.

1. Weighing In:

The weighing in of the competitive ships always tends to be a source of considerable delay due to the fact that each competitor desires to obtain an advantage of the lowest possible gross weight for general performance and at the same time to include in his declared weight a sufficient amount of gasoline to enable the ship to exceed that of his competitors in range.

In the 1936 competition for pursuit, basic trainer, single engine bomber and twin engine bomber, the Army established minimum performance and load carrying ability for each class of airplane. On that occasion the representative of each factory knew the minimum qualifying speed, range, climb, etc., as this information was given to all interested competitors.

Proposals submitted in 1936 competition were delivered some nine months before the actual tests began and the Army used the weight data contained in those proposals as a basis for arriving at the empty weight of each ship. However, the commission in charge of these tests had developed an arbitrary interpretation of "empty weight", which results in this weight including many items of equipment not considered as "empty weight" in the United States. All fixed equipment such as oxygen, radio, etc. is considered as being included in "empty weight".

This policy sometimes reacts against the manufacturer who equips his demonstrator with the more modern items of equipment which might be lacking in a competitor's ship. This proved to be the case when the manufacturer equipped his ship with a constant speed propeller, Cambridge gas Analyzer etc. if the competitor was not so equipped. In the case of one airplane in particular, the Vultee, the actual empty weight of the ship proved to be more than 1500 pounds in excess of the empty weight as given in the proposal. Deducting certain improvements in the demonstrator airplane which were not taken into account when the official proposal was prepared some time previous, the excess weight was approximately 1100 pounds. In order to carry the required amount of useful load as specified for that type of ship by the commission, this ship was required to perform its tests with about 1/2 ton of additional weight with consequent unsatisfactory results in take-off, climb and ceiling.

2. Tailing Test.

This is a test to determine the ability of the landing gear to withstand severe treatment and consists of three runs over a course of about 1 kilometer in the shape of a quadrangle, the time required for

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each trip being recorded. The pilot is required to develop the greatest speed he can without lifting the tail from the ground. This proved to be a more serious test than it at first appeared and the commission noted the effect on the landing gear, particularly on the turns. This also enabled the commission to judge of the general handling qualities of the ships on the ground and furthermore was used to check the tendency of the engines to overheat.

### 3. Range.

Range tests were made at critical altitude and at 5,000 meters on all ships. First, a flight to those altitudes was made and the airplane returned immediately to the starting point. An accurate check was made of the amount of gasoline in the tanks before and after these flights in order to establish the amount of gasoline required to reach those altitudes. Then subsequent flights were made at those altitudes of 1/2 hour each. The gasoline consumption during those runs was obtained by the use of a flowmeter and was also checked on the ground by ascertaining the amount of the original gasoline that had been consumed and deducting from that figure the amount calculated as having been used to go to and return from the altitude at which the gasoline consumption was calculated. Having established these figures, the consumption of the engine was determined for each speed, (top speed, the speed represented as the cruising speed in the proposal, and at the most economical speed) thus it will be seen that several runs were made at each of the two altitudes already mentioned. Since the airplane's gasoline capacity for all the tests was established in the proposal before the competition on the basis of the lowest quantity that would enable the contestants to meet the minimum range requirements, the range of the airplane was determined at each altitude and at each speed by dividing the corresponding gasoline consumption per hour into the "official" gasoline load to establish the number of hours at each speed and altitude and then by multiplying the resulting figure by the corrected air speed record on each of these runs.

In all of these tests, of course, recording instruments were installed, including the following:

Tachometer, air speed, barograph, boost gauge and flowmeter. Naturally, with all of these recording instruments installed, a pilot could not misrepresent the true performance of his ship by exceeding his minimum permissible supercharger pressure on take-off or climb to gain an advantage, nor could he, without danger of being disqualified, employ an excessively rich mixture for his first climb to altitude during the trial climb made to determine the gas consumption in going to and coming from the critical altitude and the 5,000 meter altitude in connection with the range tests.

### 4. Take-off and Landing Tests.

These were measured by a European camera located on the ground at about 100 yards behind the airplane. This camera was located at a distance behind the airplane on take-off to permit of the wing tips being well within the range of the camera and from the moment the word was given for the pilot to proceed, the camera, which operated cinematographically in conjunction with a chronometer, began to operate at the instance of the personnel in charge of it. These films, when developed, showed clearly the recorded time at which the airplane began to move forward and the time when the wheels left the ground, the difference representing the time of the take-off run. In addition, stop watches were held by other members of the commission to check the take-off time and an average was taken of 3 such readings. Time was counted from the moment the wheels of the plane began to move and until they were seen to leave the ground. The pilot was permitted to have his

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engine revving up to maximum permissible boost. Likewise, the take-off distance was measured by a member of the commission who attempted to locate as accurately as possible the point at which the wheels had left the ground. Three take-offs were made and an average taken of the times and length of runs.

The landing tests were made in the same manner, the pilot being obliged to land into the wind directly over the head of the operator of the camera and at a point not less than 100 meters from him in order that the camera could obtain a record of the speed of the airplane immediately before touching, of the speed on touching and the amount of time required to come to a stop. At the moment each of these tests began, a record was made of the wind velocity at a point on the ground near the airplane.

#### 5. Stall and Glide Tests.

In the first of these tests the airplane takes-off with the full normal load chosen by the representative as the official normal gross weight at which all tests are conducted (with the exception of landing tests which are made without bomb load) and at an altitude of at least 1,500 meters the pilot retards the throttle and then gradually pulls up gently until the plane stalls and falls off on a wing. The air speed recorded by the automatic air speed recorder is corrected for altitude, density and pressure as well as for the air speed error in order to arrive at the stalling speed of the airplane at that altitude.

The glide test consisted of a climb to 1,500 meters to initiate a glide with the power plant completely throttled and upon getting close to the ground over the field the commission made note of the time required for the glide, the purpose being to stretch the glide over the maximum amount of time. Without landing the ship, then climbed again to 3,000 meters and began another glide with the difference that at the end of this glide the pilot was required to land without using any power during the entire glide with the exception of a slight amount of power at the end of the glide if necessary to assure a proper landing. This use of power could not be such as to lengthen the glide and could only be used at the very end of the glide on coming in for landing.

The purpose of this test, in addition to enabling the commission to form an opinion of the aerodynamic qualities of the airplane versus wing loading, was to enable them to observe the performance of the engines in excessively long glides. This test was severely criticised by the pilots, on the ground that it was more of a test of piloting than of the qualities of the airplane (involving spot landings from 10,000 feet) and also involving a certain amount of risk to the engine due to quick cooling in the glide and to the airplane itself with which the pilots were entrusted in the event that motor failure developed due to "loading up" which might have resulted in the loss of an engine just when the pilot might require a small amount of power to get into the field after his long glide. It must be remembered that many makes of engines were present in the airplanes tested and for that reason the Army here desired to locate the weak points of the power plants as well as of the airplanes.

#### 6. Climb Tests.

This test was designed to enable the commission to obtain exact data as to the time required for the ships to climb to service ceiling, and to 5,000 meters in the case of those ships with service ceiling in excess of that figure. As usual, the commission had means of detecting any use of an amount of power in excess of that recommended by the engine

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manufacturer. In all of these tests a careful watch was maintained to make sure that no contestant modified his propeller setting or settings in any way throughout the competition. This naturally gave a decided advantage to the two ships entered which were equipped with a constant speed propeller. Service ceiling is defined here as the point at which the rate of climb falls below .5 meters per second which is roughly 100 feet per minute. Naturally the recording barograph was calibrated frequently and corrections were made to arrive at the true standard altitude on the basis of the formula adopted.

The Commission required in these tests a fairly even curve on the barograph, which was exceedingly difficult to obtain in view of the peculiar atmospheric conditions in this section of Argentina which, according to American engineers who have made studies of the problem (which data is available from the Wright Aeronautical Corporation), resulted in carburetor ice forming more readily than almost anywhere else in the world. Consequently, when several attempts were made unsuccessfully to climb without the use of carburetor intake air heat, due to the loss of power and consequent break in the curve on the occasion of each application of heat, it was found that the only way to obtain an uninterrupted climb curve was through the use of a certain amount of carburetor heat throughout the entire climb beginning immediately after the take-off. This was protested by the representatives, but the commission maintained that they were interested in obtaining information as to the performance of the equipment in their own country, and not in the performance of the equipment under ideal atmospheric conditions such as do not exist in this country. By the use of heat to the carburetor all the way up through the climb a smooth curve was obtainable but it naturally did not permit the airplane to show up to best advantage such as would have been the case had saw-tooth climbs been permitted.

#### 7. High Speed and Cruising Speed Tests.

These tests were combined with the climb tests, so that as the pilot returned to earth from his service ceiling he made a full throttle run at each altitude in terms of thousands of meters. For example, a ship whose service ceiling had been located at 7,500 meters, indicated, dropped down to 7,000 meters and ran a full throttle test at that altitude. These full throttle runs were made over periods of 15 to 30 minutes. Cruising speed runs were made at the percentage of power declared in the proposal of the manufacturer as being used to obtain the cruising speed claimed for the airplane at various altitudes. Thus an airplane with a cruising speed at critical altitude based on the use of 75% of rated power at that altitude was allowed to use 75% power for cruising speeds at higher altitudes. Consequently, in most cases only a single run was required at altitudes of 5,000 meters and above, since most of the engines would not develop more than 75% of their rated power above 5,000 meters. At the altitudes from critical altitude up to the point where full throttle operation developed more power than the percentage of power used by the manufacturer in calculating his cruising speed at critical altitude, two runs were made. One was made at the declared percentage of power for cruising speed and the other at full throttle. No speed runs were made below critical altitude, and in the case of sealevel engines the manufacturer specified the lowest level at which he desired to make his speed runs. In these speed tests the commission required that full normal equipment be installed just as was required for all other tests. Radio masts and antenna as well as other protuberances were required to remain installed. This represented a slight advantage for the Italian Savoia twin engine bomber which was equipped with retractable radio masts and radio compass loop. Naturally, the barograph enabled the commission to determine the attitude of the

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airplane during the speed runs, to detect any tendency of the pilot to nose the ship downward and it also should be added that the mechanisms of the barograph and the recording air speed were synchronized so that it was only necessary to make a record, before each flight, of the time on each strip at the moment they were set in operation immediately prior to the take-off of the airplane. Thus the two strips could later be matched up and gave an accurate record of the indicated air speed during each moment of the flight and the indicated altitude at the same moment. The only instrument employed in these tests by the commission which offered any resistance was the outside air temperature indicator which was located on the outer wing struts of bi-planes and under the wing about midway between the fuselage and the wing tip on monoplanes. It is believed that the loss of speed from the external location of this small instrument was negligible. However, it was noted unusually high outside air temperatures were recorded in the case of a low wing all metal monoplane due to the air being heated by friction at high speeds with the metal and the commission solved this difficulty by taking its own readings from an Army ship flown simultaneously at the same altitude.

#### 8. Air Speed Calibration.

The recording air speed used by the commission was connected with the static line of the airplane. The airplane air speed indicator was left installed, of course, and the recording air speed was led off from the line by employing a two-way connection. During the air speed calibration the pilot was required to fly at 3 varying indicated air speeds such as 100 mph - 150 mph and 200 mph at an altitude of not more than 50 meters above the ground at the El Palomar air base, which is probably not more than 50 meters above sea level. The course flown was 1 kilometer in length and clearly marked. At each end of the course, theoretically exactly 1 kilometer apart was stationed a Western Electric high speed camera of the type used for photographing the finish of horse races in the United States. The pilot attempted to hold his air speed constant over the 1 kilometer course without varying his altitude, by use of the throttle. At each indicated air speed he made three round trips. Thus a comparison of his true air speed as obtained from the records of the two cameras whose chronometric systems were exactly synchronized and maintained in exact synchronization by telephone, with the indicated air speed as recorded by the recording air speed indicator installed in the ship, a fairly accurate idea was gained of the air speed error in the ship's installation. This data naturally was corrected for density and pressure, insofar as the recorded air speed was concerned.

Standard atmosphere is identical in Argentina to the definition of standard atmosphere as determined by the F.A.I. However, the Argentine Commission varied from the European method of determining altitude for the correction of indicated altitude data in the climb and speed tests by striking an average between the results obtained by correcting first for density and then for pressure. They refer to their method of obtaining true altitude as the "half and half method", that is, if an indicated altitude of 5,000 meters gave a 5,600 meter density altitude and a 5,800 pressure altitude, the Argentine Commission considered the true altitude to be 5,700 meters.

#### 9. Acrobatics.

The acrobatics prescribed included practically everything in the full range of individual stunts with the exception of outside loops, insofar as the pursuit ships were concerned. Spin tests were required on all classes with the exception of twin engine bombers, even including single engine bombers and attack planes. Only two turns of a spin were

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required for these ships in each direction but in the case of the pursuit ships it was required that the ship be brought out of the spin exactly upon the completion of the 5th turn and heading in the direction as of the moment the spin was initiated. This proved to be a considerable test for the pilots and in the case of one American ship (which had been rejected at Wright Field a short time previous) the pilot, one of the best known American scientific test pilots, found it impossible on the first attempt to bring his ship out of the spin in less than 8 or 9 turns. Incidentally, this resulted in the ship being disqualified although it had met with high approval by the commission in all other tests.

10. In addition to the actual performance testing, there are other factors which are important influences in the decision of the Argentine Government, such as price, delivery, geographical location of the manufacturer (this refers to manufacturers located in countries which the Argentine Government believes may not be able to deliver through fear of war or war preparation) and the standing of the manufacturer in his home country, both as regards his financial and moral responsibility, and the regard in which his design is held by the air services in his home country. Although the Government would be morally obliged to purchase a ship which might stand out in the competition as highly superior to its competitors and which might more than meet the requirements as specified by the Government prior to the competition, it is highly doubtful if this ship would be purchased if the manufacturer were lacking in one or more of the points just mentioned as being required. Consequently, it is extremely difficult for a U.S. manufacturer of a ship which is a type not used by the United States air services to successfully compete in Argentine competitions even though his ship might be superior in construction and performance. The same applies to European ships, though not to the same extent for the reason that several European governments assist their aircraft manufacturers by certifying to the qualities of the airplanes even though they may not be in actual service in the military air forces of those countries.

In view of the fact that these various factors have a strong influence on the final selection by the Argentine Government, even to the point of nullifying the results of the performance competition, it may well be asked why these competitions are held. That question probably could not be answered satisfactorily by the Government. However, any manufacturer desirous of selling in this market is obliged to take part in the competition, which involves sending demonstrators and personnel to Argentina. Some 60 airplanes were entered in the 1936 competition but only 12 were taken into consideration by the Argentine Government.

Source: Mr. A. Ogden Pierrot - the most successful agent competitor in the 1936 & 1937 tests.

*Lester Baker*  
Lester Baker, Col. Inf.,  
Military Attache.

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From M/A Argentina.

Report No. 5803.

May 17, 1938.

G-2

NO REFERENCE TO PUBLICATION  
IN SERVICE JOURNALS.

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ARGENTINA - Aviation

IDENTIFICATION

Subject: Army and Navy Planes

The distinguishing marks that are now used on Argentine military planes are as follows:

1.- ARMY

(a) The upper and lower wings have a rosette 1.32 meters in diameter forming three concentric rings of equal dimensions and colored with the national colours (light blue, white and light blue) see attached Annex "A".

(b) The fuselage has a similar rosette but of .60 meters diameter, on both sides of the central part of the body. (see Annex "A")

(c) The tail has on both sides of the steering rudder - the national flag. Three equal horizontal stripes with the top and bottom of light blue and white in the center. The inner stripe containing a flaming sun of gold with human features. (see Annex "C")

2.- NAVY

For naval planes belonging to Tactical Forces:

(a) (1) BIPLANES:

Characteristics. The upper part of the top wing will be painted orange colour and will carry an anchor on each wing tip, in the manner indicated in the drawing, with measurements as follows: Distance from the wing tip to the axis of the shaft, A-1/8 of the wing span; height of the anchor, B-9/10 of the maximum width. These anchors will be painted black and their thickness will be in proportion to their height. The under side of the lower wing will also carry anchors in a similar position to those of the upper wing and in proportion to the dimensions of the wing.

(2) MONOPLANES:

The wings will carry anchors in a similar manner to the biplanes.

The upper part of the monoplane will be painted orange colour. The rest will be painted aluminum colour with the housing and engine supports navy grey.

(3) ALTITUDE RUDDER:

The national colours will be painted on both faces as shown in attached Annex "C".

(4) STEERING RUDDER:

The national colours with the sun in the center on both faces. The top blue band will extend across the top corner of the stabilizing plane. (See Annex "D")

-1-

From H.A. Argentina

Report No. 5586.

May 19, 1937

ARGENTINA - Aviation  
IDENTIFICATION  
Subject: Army and Navy Planes

## b.- GROUPS.

- (1) Aerial Fleets : The Aerial Fleets will be designated by the numbers 1, 2, 3, etc.
- (2) Sea Fleet Aviation: Will be designated by the letter M.

## c.- TACTICAL.

Attack Planes.....A  
 Combat " .....C  
 Bombardment or torpedoes.....B  
 Observation.....O  
 Patrol.....P

## d.- NUMERALS WITHIN THE SQUADRON.

Planes will be numbered in correlative order from 1 up to the highest number corresponding to the same squadron.

These three characteristics, b)-c) and d)-, will be painted black on both sides of the fuselage or boat, each separated by a hyphen. They will be a height equal to one third of the height of the anchor and of a proportionate width.

Example..... 2-A-3 equals

No. 3 of the attack squadron, of the No. 2 Aerial Fleet.

The characteristic numeral of the squadron, will also be painted in black on the central plain (upper part) and on the fuselage.

On the low winged monoplanes, this characteristic will be placed on the upper part of the fuselage at the front or back of the cabin, according to the type of airplane.

The height of the number will be equal to one half of the height of the anchor and of a proportionate width.

## e.- REGISTER:

The object of the register number is to facilitate the administrative control of same within Naval Aviation. It will be placed in the central part of the plain on both sides of the stabilizing plane. The height of the number will be 100 mm. and of a proportionate width. Within each purpose to which they are assigned, the numbers will be correlative starting from 1.

## f.- AIRPLANES BELONGING TO AUXILIARY FORCES.

Airplanes used for:

Transport

Photography

Communications

Training

Will be identified in the following manner:

Transport.....G.t

Photography.....G.f

Communications.....G.c

Training.....G.e

G-2

9550-d

ARGENTINA - AVIATION  
IDENTIFICATION  
Subject: Army and Navy Planes

For tactical purposes, planes will observe the same rules established in (a)-, (b)- and (e)-.

Regarding the established rule in (d)-, they will carry the same characteristics on the central plain.

g.- SCHOOL PLANES.

These planes will be distinguished by the letter E, which will be carried in the place indicated in (d)- for airplanes of tactical purposes. These airplanes will also come under the dispositions (a), (b), (d), and (e), with the general purposes and also the following exceptions: The numbering will be applied in the following manner:  
Elemental instruction airplanes, from.... 1 to 30  
Advanced instruction airplanes, from.... 31 to 60  
Complementary instruction airplanes, from.... 61 to 100

h.- DISTINGUISHING MARKS.

For conventional signs of Commanders of Sections, Squadrons or Fleets see Annex "E".

i.- PENNANTS.

When the Navy Airplanes have on board any authorities, who in accordance with Maritime Ceremonial, have a right to carry pennants, these should be placed on each side of the fuselage or boat.

Airplanes without sign pennants will fly a flag on one of the inter-wing uprights or any other place that is visible from the exterior.

The pennants are the same size as the distinguishing marks and are made of aluminum plate.

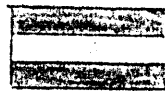
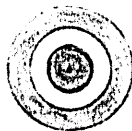
*Lester Baker*

Lester Baker  
Lt. Col., Inf.  
Military Attache



ANNEX - " A "

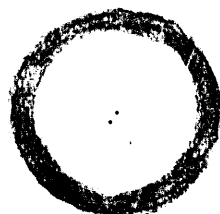
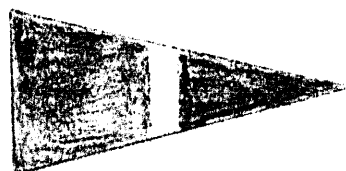
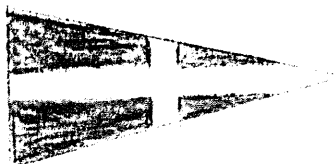
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ANNEX - " E "

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WAR DEPARTMENT  
MIL. INTEL. DIV.  
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JUN 5 1918



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1. 27 1938

Nine persons were killed, eight officers of the armed forces of Argentina and Señor Eduardo F. Justo, youngest son of the President, on January 9 when a Lockheed army plane piloted by Lieutenant Colonel José F. Bergamini, commander of the First Air Squadron at El Palomar, crashed in a storm near Itacumbú, Uruguay, while returning from the dedication ceremonies of the International Bridge between Argentina and Brazil which will join the towns of Paso de los Libres and Uruguayana. This is the worst accident in the history of Argentine military aviation. The plane had been in service only a short time; on its trip from Buenos Aires to Paso de los Libres President Justo was a passenger, but he returned by a navy plane.

The killed were:

Colonel Abraham Schweizer, head of the military household of the President;  
Lieutenant Colonel Antonio Berardo, commanding the First Mounted Artillery;  
Lieutenant Colonel Firmo H. Posadas, aide to President Justo;  
Lieutenant Colonel José F. Bergemini, (pilot) commander of the First Air Squadron at El Palomar;  
Major Victor V. Vergani, commanding the First Observation Group;  
Lieutenant Commander Juan Oreschink, secretary to the Minister of Marine.  
Two sergeant mechanics of the army.

All these officers had had brilliant careers in the armed forces. Colonel Schweizer joined the army in 1903, had studied with German army and been Military Attaché in Berlin. Lieutenant Colonel Bergemini had been in aviation since he joined the army in 1917 as sub-lieutenant on graduation from the Military College.

Although there was some talk of sabotage as cause of the accident this was emphatically denied by Lieutenant Colonel Francisco Torres who is conducting the investigation. He stated on January 14, the day of the funeral of the victims in Buenos Aires, that the electrical storm through which the plane was passing was to blame.

The fuselage was some distance from where the motors buried themselves in the ground, and the bodies were scattered over a wide area, blown to bits. The plane came down in a desolate area and there were no actual eye-witnesses. (1)

Source: Press,  
Official statements.

Lester Baker, Col. Inf.,  
Military Attaché.

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From M/A Argentina.

Report No. 5705.      January 15, 1938.

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2076-147



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G-2 Report.

9,910.

2076

ARGENTINA - Aviation - Military.

Subject: Accidents.

RECEIVED MAR 25 1939

The first fatal army aviation accident in the Argentine Army Air Force since the U.S. Army Air Mission began instruction ( nine months ago) occurred on March 20, 1939, at El Palomar base when a new Martin bomber (bought in the United States) resembling the "B-10-B" type crashed and burned at that field.

Two student officers, Captain José A. Dominguez, Captain Augusto Bolognini, and a mechanic, Julio Perez, were killed and the plane completely destroyed.

Neither of these students had had more than eight or ten hours of flight, as pilots, to their credit with a Martin Bomber type. They were taking off the field for a practice flight when the accident occurred.

Some of the U.S. Army instructors and other officers who were on the field at the time said that they saw the plane take off properly but that when it reached a height of about 75 feet above the ground it suddenly banked sharply to the left and nose-dived to the ground, bursting into flames on impact. Both officers and the mechanic were burned to death.

Captain Dominguez was piloting. The officers of the American Mission say he not only had but a few flying hours of experience with a bomber type of plane but that he was a stubborn and careless flyer. They believe that the accident was caused by poor judgment, or careless action on the part of the pilot, and not from faulty matériel.

Unfortunately, within 24 hours time - on March 21, 1939, an Argentine Navy plane of a similar Martin Bomber type, "3-B-6", crashed at Punta Indio, about 125 miles from Buenos Aires. An officer and four non-commissioned officers escaped with their lives and slight injuries as the plane hit the ground before it burst into flames and was completely destroyed.

This Navy accident, although the plane had not cleared the ground by much more than 40 feet, was so similar to the Army accident that it was expected that informed circles would lay the blame to faulty matériel.

So far, La Prensa, La Nacion and El Mundo all comment on the accidents and indicate that a lack of speed caused both accidents. The press also insists that the authorities make public findings of investigations into such accidents.

#### REMARKS.

The Argentine student air officer is reported to be a type who after a little knowledge in flying considers it too elemental to be cautious in such matters as checking up on the apparatus he is to use prior to the take-off. With modern planes such as these bombers such action is inexcusable and only results in disaster.

From M/A Argentina.

Report No. 5976.

March 23, 1939.

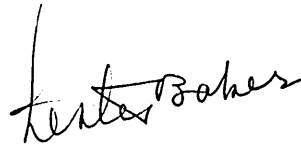
G-2 Report.

9,910.

Latin-American temperament may not be conducive to modern flying. Not more than a few months ago an Argentine student officer while flying jumped to the ground to his death after fighting with the instructor for the controls when the plane went into a spin at low altitude. The instructor, after the student bailed out, got control of the plane and brought it and himself down safely.

This was during the first day of a blind flying course under the instruction of the U.S. Army Air Mission.

Source: Personal contacts.



Lester Baker, Col. Inf.,  
Military Attaché.

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Confirmation copy by steamer Mar. 24th.

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| Classification |
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| Enclosures<br>152       |
| Record Section File No. |
| Copy No. 601-153/9      |

# MILITARY INTELLIGENCE DIVISION WAR DEPARTMENT GENERAL STAFF

## MILITARY ATTACHÉ REPORT Argentina.

Subject New Air Force Commander.  
Brief Descriptive Title

Country Reported On

I.G. No. 9210

Source and Degree of Reliability:

Official.

Summarization of Report  
When Required

In Comments on Current Events Enter Item Headings Here

Brigadier General Angel M. Zuloaga, outstanding aviator of the Argentine Army, has succeeded Colonel Antonio Parodi as commander of the Argentine Army Air Force. This assignment was made shortly after General Zuloaga was promoted a general officer, and it is the first time that an officer of such grade has commanded the Air Force. 2001-153/9

For details of General Zuloaga's career see G-2 Report No. 6487, I.G. 5990, January 25, 1941.

*M. A. Devine, Jr.*  
M. A. Devine, Jr.,  
Colonel, G.S.C.,  
Military Attaché.

All copies airmailed Feb. 12th.

G-2 Distribution: 4, ..... 5, ..... 6, .....  
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From M. A. Argentina. .... Report No. 6513. .... Date February 12, 1941. ....  
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